ORDER NO. AVS9007360C8

Service Manual

Digital AV Mixer

WJ-AVE5



CONTENTS

Panasonic

Matsushita Electric Industrial Co., Ltd.
Central P.O. Box 288, Osaka 530-91, Japan

SPECIFICATIONS

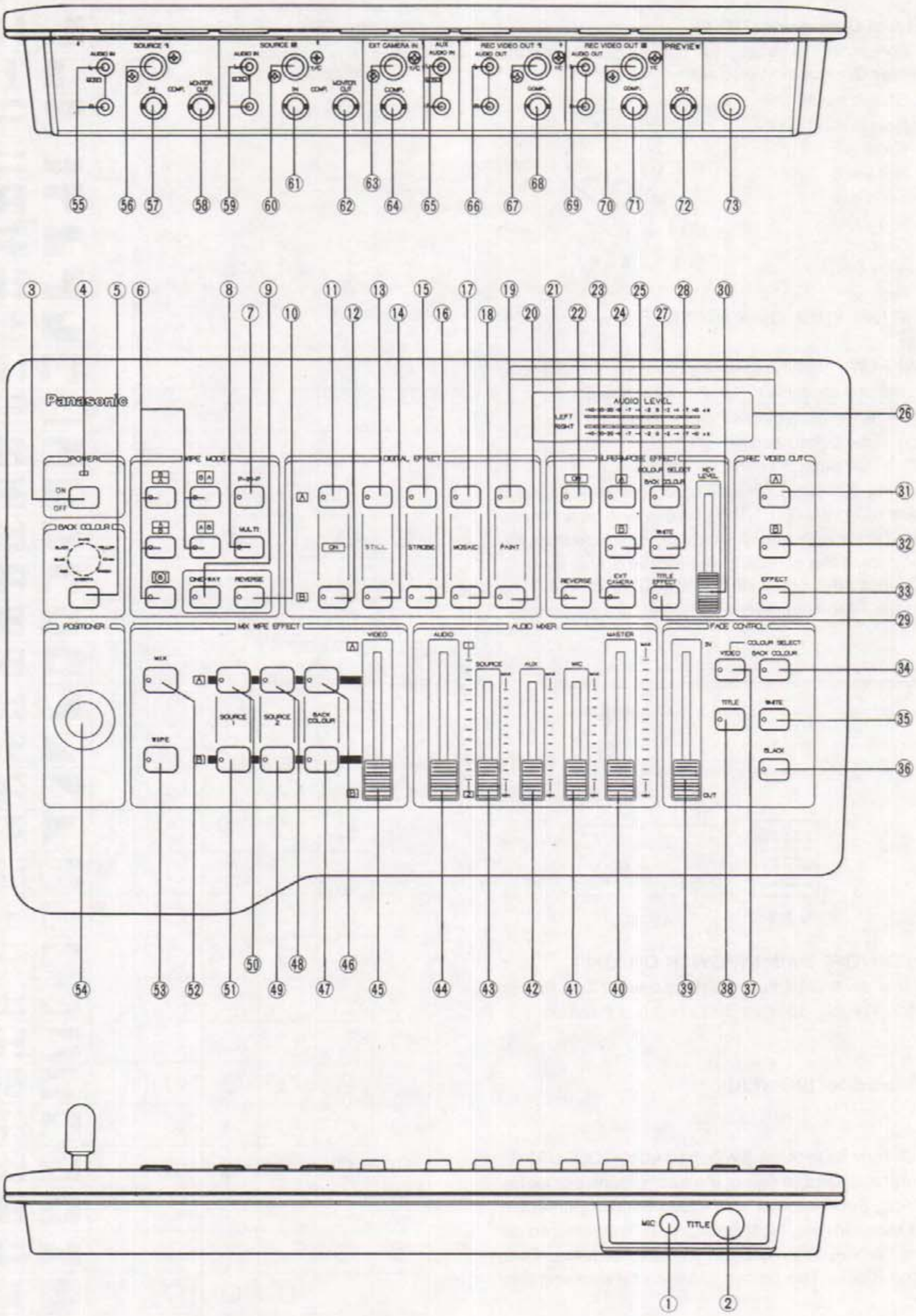
Source Input:	×2 (SOURCE 1 and SOURCE 2)
Video Input:	1.0 Vp-p/75 ohms PAL composite signal, BNC connectors
Y/C Input:	Y signal; 1 Vp-p, C signal; 0.3 Vp-p, 75 ohms, Mini DIN 4 pin connector
Audio Input:	−6 dBV/15 kohms, pin jack (Left and Right)
External Camera Input:	1.0 Vp-p/75 ohms CCIR or PAL composite signal, BNC connector × 1
Recording Output:	×2 (REC OUT 1 and REC OUT 2)
Video Output:	1.0 Vp-p/75 ohms, PAL composite signal, BNC connectors
Y/C Output:	Y signal; 1 Vp-p, C signal; 0.3 Vp-p 75 ohms, Mini DIN 4 pin connector
Audio Output:	−6 dBV/1 kohms, pin jack (left and Right)
Preview Video output:	1.0 Vp-p/75 ohms, PAL composite signal, BNC connector × 1
Monitor Output:	×2 (MONITOR OUT 1 and MONITOR OUT 2) 1.0 Vp-p/75 ohms, PAL composite signal, BNC connector.
External Sound Input:	
MIC Input (mono):	−60 dB/600 ohms, unbalanced, tip-ring-sleeve type phono jack × 1
AUX Input:	−6 dBV/15 kohms, pin jacks (Left and Right)
Character (TITLE) Input:	10-pin connector × 1 for optional Character Generator WV-KB12 or WJ-TTL5
Effects:	
Video:	Still, Strobe, Mosaic, Paint, Mix, Wipe, Superimpose, Fade-in/out
Audio:	Mix, Fade
Back Colours:	White, Yellow, Cyan, Green, Magenta, Red, Blue, Black
Wipe Patterns:	98 patterns
Others:	P-IN-P, MULTI, ONE-WAY, REVERSE
Gain:	Unity (Video)
Signal-to-noise Ratio (Typical):	Video: 45 dB (Composite), 45 dB (Y/C) Audio: 60 dB
Power Source:	240 AC, 50 Hz for WJ-AVE5/A and WJ-AVE5/B; 220V AC 50 Hz for WJ-AVE5/G
Power Consumption:	13W
Ambient Temperature:	0° - 40°C
Ambient Humidity:	Less than 90%
Dimensions:	420(W) × 70(H) × 280(D) mm
Weight:	2.8 kg

Weight and dimensions indicated the approximate.
Specifications are subject to change without notice.

OPTIONAL ACCESSORIES

- Character Generator WV-KB12, WJ-TTL5

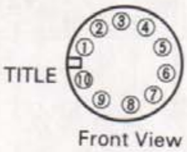
MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS



1. **Microphone Input Jack (MIC)**
This jack is used to connect a microphone with a tipring-sleeve or tip-sleeve type phone plug.

2. **Title Input Connector (TITLE)**
This connector is used to connect the optional Character Generator WV-KB12 or WJ-TTL5.

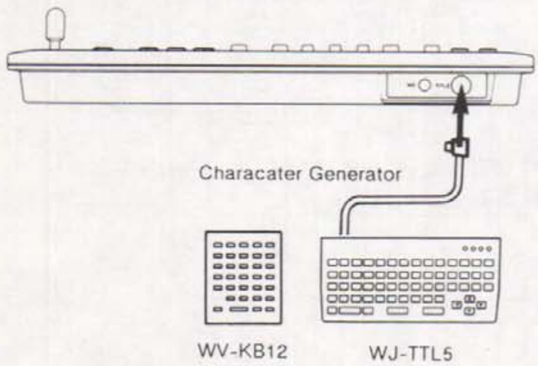
(1) : Character IN
(2) : Not used
(3) : Ground
(4) : Not used
(5) : Sync out
(6) : Not used
(7) : Ground
(8) : +9V OUT
(9) : Ground
(10) : ID (WV-KB12: Open, WJ-TTL5: Ground)



Notes:

1. When WV-KB12 is used with this unit, the following functions of the WV-KB12 are Disabled:
   1) Stopwatch display
   2) Title colour setting
   3) Title page display
2. During scrolling of titles in the smallest charactor size using WJ-TTL5, the place where new lines of charactor appear will gradually move up from the bottom of the screen to the middle of the screen.

- Connect the cable of the WV-KB12 or WJ-TTL5 to the Title Input Connector (2) as shown below.



3. **Power ON/OFF Switch (POWER ON/OFF)**
Press this switch to turn on the power. The Power Indicator (4) lights up when this switch is pressed.

4. **Power Indicator (POWER)**

5. **Back Colour Selection Switch (BACK COLOUR)**
This control is used to select the background colour for Mix, Wipe, Superimpose and Video Fader operations. One of the following eight background colours can be chosen: White, Yellow, Cyan, Green, Magenta, Red, Blue and Black. The colour changes by pressing this switch.

6. **Wipe Pattern Selection Switches (WIPE MODE)**
In combination of five switches, the following wipe patterns can be made as shown in the table. The LED lights when pressed. Please note that the positioning of the pattern by operating a Joystick Positioner (54) is effective for three patterns marked " P " in the table.

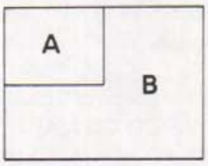
WIPE PATTERNS								
A B	B A	A / B	B / A	O	POSI	NON MULTI	x4 MULTI	x16 MULTI
○								
	○							
		○						
			○					
○		○						
	○	○						
○			○					
	○		○					
○	○							
		○	○					
○		○	○					
	○	○	○					
○	○		○					
○	○	○						
○	○	○	○		Ⓟ			
				○	Ⓟ			
○			○	○				
	○		○	○				
○		○		○				
	○	○		○				
○				○				
	○			○				
		○		○				
			○	○				
○		○	○	○				
	○	○	○	○				
○	○	○		○				
○	○		○	○				
○	○	○	○	○	Ⓟ			
○	○			○				
		○	○	○				
P-IN-P					Ⓟ			
CUT							A ↔ B	
CUT-MULTI								

7. **Picture-In-Picture Switch (P-IN-P)**
A 1/4sized · Picture-In-Picture mode will be obtained by pressing this switch once.The LED lights up.When this switch is pressed again, a 1/16 sized · Picture -In-Picture mode will be obtained.The positioning of the Picture-In-Picture mode can be operated by the Joystick Positioner (54). When this switch is pressed third time, this mode ends to return to a normal picture mode.Then LED lights off.

Notes:

(1) When you change the Mix/Wipe Control (45) from A to B or B to A in P-IN-P mode, the pictures alter their position from B to A or A to B correspondingly.

(2) When a 1/4 sized or 1/16 sized · picture is positioned to the left edge, the P-IN-P mode may not be completed in the fringe area for some television monitor.



(3) The Strobe and the Still will not function when the picture-in-picture mode is used.

8. **Multi Wipe Pattern Switch (MULTI)**
When this switch is pressed once, the wiped pattern multiplied by four times. And when this switch is pressed again, the wiped pattern multiplied by sixteen times.The LED lights up when this mode is selected. The LED lights off when this switch is pressed three times to return to normal wipe mode.

9. **One-Way Wipe Switch (ONE-WAY)**
When this switch is pressed, the LED lights up, the wiping direction stays same in regardless of changing the Mix/Wipe Control (45).

10. **Reverse Wipe Switch (REVERSE)**
When this switch is pressed, the LED lights up, the position of the wiped pictures will be laid reversely.

11. **A-bus Digital Effect ON/OFF Switch (ON)-A**
This switch is the A-bus ON/OFF switch for the digital effects, such as STROBE, STILL, MOSAIC and PAINT.

12. **B-bus Digital Effect ON/OFF Switch (ON)-B**
This switch is the B-bus ON/OFF switch for the digital effects, such as STROBE, STILL, MOSAIC and PAINT.

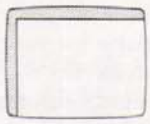
13. **A-bus Still ON/OFF Switch (STILL)-A**
This switch is used to freeze the A-bus picture.Pressing this switch once, the A-bus image will freeze and the LED indicator in the switch lights. To return to a "live" picture, press the switch once more. The LED indicator goes off.

14. **B-bus Still ON/OFF Switch (STILL)-B**
This switch is used to freeze the B-bus picture.Pressing this switch once, the B-bus image will freeze and the LED indicator in the switch lights. To return to a "live" picture, press the switch once more. The LED indicator goes off.

15. **A-bus Strobe ON/OFF Switch (STROBE)-A**
This switch is used to obtain a strobe effect of the A-bus picture. Pressing this switch once, strobe effect is applied to the A-bus image and the LED indicator in the switch lights.The time interval of the strobe effect can be changed by pressing this switch repeatedly. Adjustment is possible from approx. 0.2 to 1 second in five steps. To return to a normal picture, press the switch once more. The LED indicator goes off.

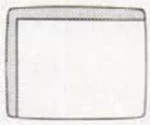
16. **B-bus Strobe ON/OFF Switch (STROBE)-B**
This switch is used to obtain a strobe effect of the B-bus picture. Pressing this switch once, strobe effect is applied to the B-bus image and the LED indicator in the switch lights. The time interval of the strobe effect can be changed by pressing this switch repeatedly. Adjustment is possible from approx. 0.2 to 1 second in five steps. To return to a normal picture, press the switch once more. The LED indicator goes out.

17. **A-bus Mosaic ON/OFF Switch (MOSAIC)-A**
This switch is used to obtain a mosaic effect of the A-bus picture. Pressing this switch once, a mosaic effect is applied to the A-bus image and the LED indicator in the switch lights. The mosaic size can be changed in four steps by pressing this switch repeatedly.



When the mosaic effect is selected, the mosaic effect is not performed in the left and top edges. It does not indicate equipment failure. To return to a normal picture, press the switch once more. the LED indicator goes off.

18. **B-bus Mosaic ON/OFF Switch (MOSAIC)-B**
This switch is used to obtain a mosaic effect of the B-bus picture. Pressing this switch once, a mosaic effect is applied to the B-bus image and the LED indicator in the switch lights. The mosaic size can be changed in four steps by pressing this switch repeatedly.

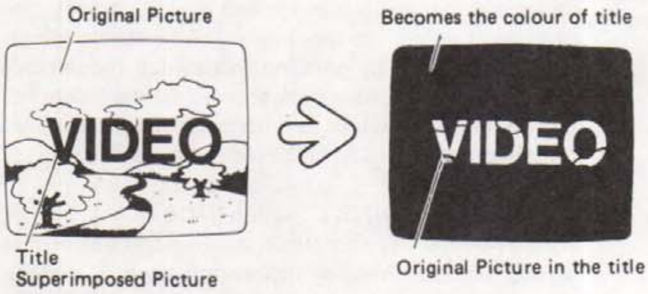


When the mosaic effect is selected, the mosaic effect is not performed in the left and top edges. It does not indicate equipment failure. To return to a normal picture, press the switch once more. the LED indicator goes off.

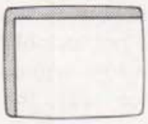
19. **A-bus Paint ON/OFF Switch (PAINT)-A**
This switch is used to obtain an oil-paint touch effect for the A-bus picture. Pressing this switch once, an oil paint touch effect is applied to the A-bus image and the LED indicator in the switch lights. The graduation of paint effect can be changed in 4 steps (2 bits to 5 bits). To return to a normal picture, press the switch once more. The LED indicator goes off.

20. B-bus Paint ON/OFF Switch (PAINT)-B
This switch is used to obtain an oil-paint touch effect for the B-bus picture. Pressing this switch once, an oil paint touch effect is applied to the B-bus image and the LED indicator in the switch lights. The graduation of paint effect can be changed in 4 steps (1 bit to 4 bits). To return to a normal picture, press the switch once more. The LED indicator goes off.

21. Reverse Switch (REVERSE)
This switch is used to select the polarity of the superimposed key signal.



22. Superimpose ON/OFF Switch (ON)
This is the master ON/OFF switch for the superimpose function.



When the superimpose effect is selected, the superimpose effect is not performed in the left and top edges. It does not indicate equipment failure.

23. External Camera Selection Switch (EXT CAMERA)
This switch is used to select a external camera as a key signal for the Superimpose Effect.

24. A-bus Selection Switch (A)
This switch is used to select a A-bus picture as a key signal for the Superimpose Effect.

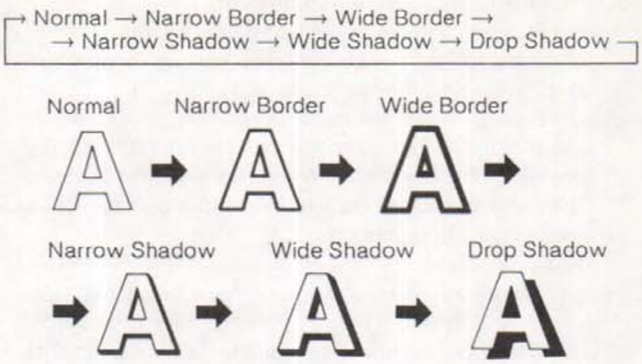
25. B-bus Selection Switch (B)
This switch is used to select a B-bus picture as a key signal for the Superimpose Effect.

26. Audio Level Indicator (AUDIO LEVEL)
These LED indicators show the output level for the left and right channels respectively.

27. Back Colour Switch (BACK COLOUR)
This switch is used to select the colour of the superimposed titles chosen by the Back Colour Selection Switch (5).

28. White Colour Switch (WHITE)
This switch is used to select the colour of the superimposed titles as a white colour.

29. Title Effect Switch (TITLE EFFECT)
By depressing this switch, the superimposed titles can be changed as follows:



30. Key Level Control (KEY LEVEL)
This control is used to adjust the luminance level of the key signal.

31. A-bus Recording Video Output Selection Switch (REC VIDEO OUT/A)
This switch is used to select the A-bus picture as for the Recording Video Output signal. The LED lights up when this switch is selected.

32. B-bus Recording Video Output Selection Switch (REC VIDEO OUT/B)
This switch is used to select the B-bus picture as for the Recording Video Output signal. The LED lights up when this switch is selected.

33. Effect Recording Video Output Selection Switch (REC VIDEO OUT/EFFECT)
This switch is used to select the effected signal (Superimpose, Mix/Wipe or Fade) as for the Recording Video Output signal. The LED lights up when this switch is selected.

34. Colour Selection Switch (BACK COLOUR)
This switch is used to select the colour for the fade-out mode. The colour is set by the Back Colour Selection Switch (5). The LED lights up when this switch is selected.

35. Colour Selection Switch (WHITE)
This switch is used to select a white colour when the picture fades out in white. The LED lights up when this switch is selected.

36. Colour Selection Switch (BLACK)
This Switch is used to select a black colour when the picture fades out in black. The LED lights up when this switch is selected.

37. Video Fade Switch (VIDEO)
When this switch is selected, the picture will be faded in or out. The LED lights up when this switch is selected.

38. Title Fade Switch (TITLE)
When this switch is selected, the title will be faded in or out. The LED lights up when this switch is selected.

39. Fade Lever (IN/OUT)
Moving this lever from OUT to IN, fade-in of the picture takes place. Fade-out is accomplished by moving the lever from IN to OUT.

40. Audio Master Level Control (MASTER, MAX/MIN)
This is the overall attenuator for the Audio Mixer.

41. Microphone Level Control (MIC, MAX/MIN)
This is the attenuator for the microphone signal fed to the Microphone Input Jack (1).

42. Auxiliary Audio Level Control (AUX, MAX/MIN)
This is the input attenuator for the auxiliary audio signal fed to the Auxiliary Audio Input Connectors (65) on the rear panel.

43. Source Level Control (SOURCE, MAX/MIN)
This is the overall attenuator for the mixed AUDIO 1 and AUDIO 2 sound.

44. Audio Control (AUDIO, 1/2)
This control is used to balance the mixed audio signal fed to SOURCE 1 (AUDIO 1) input connector and the signal fed to SOURCE 2 (AUDIO 2) input connector on the rear panel.

45. Mix/Wipe Control (VIDEO A, B)
In the wipe mode, moving this lever from A to B will increase the portion of the B input, and vice versa. In the mix mode, video images are switched between A and B.

46. A-bus Back Colour Selection Switch (BACK COLOUR)
This switch is used to allocate the back colour signal to the A-bus input. The back colour signal can be set by the Back Colour Selection Switch (5). The LED lights up when this switch (46) is selected.

47. B-bus Back Colour Selection Switch (BACK COLOUR)
This switch is used to allocate the back colour signal to the B-bus input. The back colour signal can be set by the Back Colour Selection Switch (5). The LED lights up when this switch (47) is selected.

Note:
When the B-bus Back Colour Selection Switch (47) is selected from the B-bus Source 2 Selection Switch (49), the LED on the B-bus Source 2 Selection Switch (49) blinks.
This blinking tells you that the Soruce 2 picture will be selected when the B-bus Selection Switch (25) is pressed. The same procedure will take place when A-bus or Soruce 1 is used.

48. A-bus Source 2 Selection Switch (SOURCE 2)-A
This switch is used to allocate the source 2 video signal to the A-bus input. The LED lights up when this switch is selected.

49. B-bus Source 2 Selection Switch (SOURCE 2)-B
This switch is used to allocate the source 2 video signal to the B-bus input. The LED lights up when this switch is selected.

50. A-bus Source 1 Selection Switch (SOURCE 1)-A
This switch is used to allocate the source 1 video signal to the A-bus input. The LED lights up when this switch is selected.

51. B-bus Source 1 Selection Switch (SOURCE 1)-B
This switch is used to allocate the source 1 video signal to the B-bus input. The LED lights up when this switch is selected.

52. Mix Mode Selection Switch (MIX)
When this switch is pressed, the LED lights up, the mix mode is selected in the MIX/WIPE EFFECT.

53. Wipe Mode Selection Switch (WIPE)
When this switch is pressed, the LED lights up, the wipe mode is selected in the MIX/WIPE EFFECT. By pressing this switch, the wipe mode will be changed as follows:

→ Normal Wipe → Border Wipe →
← Soft Wipe ←

Note:
When the Border Wipe is selected, the colour can be added on the border by the Back Colour Selection Switch (5).

54. Joystick Positioner (POSITIONER)
The position of the wiped pattern such as circle, square and diamond, which is selected by the Wipe Pattern Selection Switch (6) or the Picture-In-Picture Switch (7), can be freely set using this joystick.

55. Source 1 Audio Connectors (SOURCE 1, AUDIO L/R)
−6 dBV/15 kohms audio signals for the SOURCE 1 should be supplied to these input (IN) connectors. When the monophonic audio signal is fed to the L-channel, this signal will be distributed to the R-channel internally.

56. Source 1 Y/C Video Input Connector (SOURCE 1, Y/C IN)
The luminance (Y) and chroma (C) signals from VTR or colour TV should be supplied to this connector.

Note:
The Y/C input has a priority over the composite input in circuitry.
When both the Y/C video signal and the composite video signal are supplied to the SOURCE 1 connectors at the same time, only Y/C video signal goes into the circuit.

57. Source 1 Video Input Connector (SOURCE 1, COMP.IN)

A 1.0 Vp-p/75 ohms composite video signal should be supplied to the input (IN) connector.

Notes:

(1) If the input signal does not meet the PAL colour standard or the CCIR B/W standard, this could cause synchronization error.

(2) In case the S/N ratio of the input signal is very low, this may reflect to in a low-quality picture.

(3) If the input video signal is very jittery, such as a picture played back on a VTR, synchronization or colour error may appear.

58. Source 1 Video Output Connector (SOURCE 1, COMP. MONITOR OUT)

A 1.0Vp-p/75 ohms composite video signal will be supplied at this connecter for the monitoring purpose of the Source 1 Video Input signal.

59. Source 2 Audio Connectors (SOURCE 2, AUDIO L/R)

−6 dBV/15 kohms audio signals for the SOURCE 2 should be supplied to these input (IN) connectors. When the monophonic audio signal is fed to the L-channel, this signal will be distributed to the R-channel internally.

60. Source 2 Y/C Video Input Connector (SOURCE 2, Y/C IN)

The luminance (Y) and chroma (C) signals from VTR or colour TV should be supplied to this connector.

Note:

The Y/C input has a priority over the composite input in circuitry.
When both the Y/C video signal and the composite video signal are supplied to the Source 2 connectors at the same time, only Y/C video signal goes into the circuit.

61. Source 2 Video Input Connector (SOURCE 2, COMP. IN)

The IN connector accepts a 1.0 Vp-p/75 ohm composite video signal.

Notes:

(1) If the input signal does not meet the PAL colour standard or the CCIR B/W standard, this could cause synchronization error.

(2) In case the S/N ratio of the input signal is very low, this may reflect to in a low-quality picture.

(3) If the input video signal is very jittery, such as a picture played back on a VTR, synchronization or colour error may appear.

62. Source 2 Video Output Connector (SOURCE 2, COMP. MONITOR OUT)

A 1.0 Vp-p/75 ohms composite video signal will be supplied at this connector for the monitoring purpose of the Source 2 Video Input signal.

63. Y/C External Camera Input Connector (EXT CAMERA IN Y/C)

The luminance (Y) and chroma (C) signal from VTR or colour TV should be supplied to this connector.

Note:

1. The Y/C input has a priority over the composite input in circuitry.
   When both the Y/C video signal and the composite video signal are supplied to the External Camera Input connectors at the same time, only Y/C video signal goes into the circuit.
2. This input accepts only video camera signal and will not accept VTR playback signal.

64. Composite Video External Camera Input Connector (EXT CAMERA IN COMP.)

For the key signal in the superimpose mode, this connector accepts a 1.0 Vp-p/75 ohms composite video signal. The external sync is not necessary for the camera.

Note:

This input accepts only video camera signal and will not accept VTR playback signal.

65. Auxiliary Audio Input Connectors (AUX AUDIO IN)

Accept −6 dBV/15 kohms audio signal from an external audio source. When the monophonic audio signal is fed to the L-channel, this signal will be distributed to the R-channel internally.

66. Recording Audio Output Connectors (AUDIO OUT 1, L/R)

−6 dBV/1 kohms audio signals for recording are supplied at these connectors.

67. Y/C Recording Video Output Connector (REC VIDEO OUT 1, Y/C)

The luminance (Y) and chroma (C) signals are obtained from this connector when composite or Y/C signal is supplied to source 1 or 2.

68. Recording Video Output Connectors (REC VIDEO OUT 1, COMP.)

A 1.0 Vp-p/75 ohm composite video signal, as selected by the Recording Video Output Selection Switches (31), (32), (33), is provided at these connectors.

69. Recording Audio Output Connectors (AUDIO OUT 2, L/R)

−6 dBV/1 kohms audio signals for recording are supplied at these connectors.

70. Y/C Recording Video Output Connector (REC VIDEO OUT 2, Y/C)

The luminance (Y) and chroma (C) signals are obtained from this connector when composite or Y/C signal is supplied to source 1 or 2.

71. Recording Video Output Connectors (REC VIDEO OUT 2, COMP.)

A 1.0 Vp-p/75 ohm composite video signal, as selected by the Recording Video Output Selection Switches (31), (32), (33), is provided at these connectors.

72. Preview Output Connector (PREVIEW OUT)

A 1.0 Vp-p/75 ohm composite video signal of the EFFECT (all effect) image is provided at this connector.

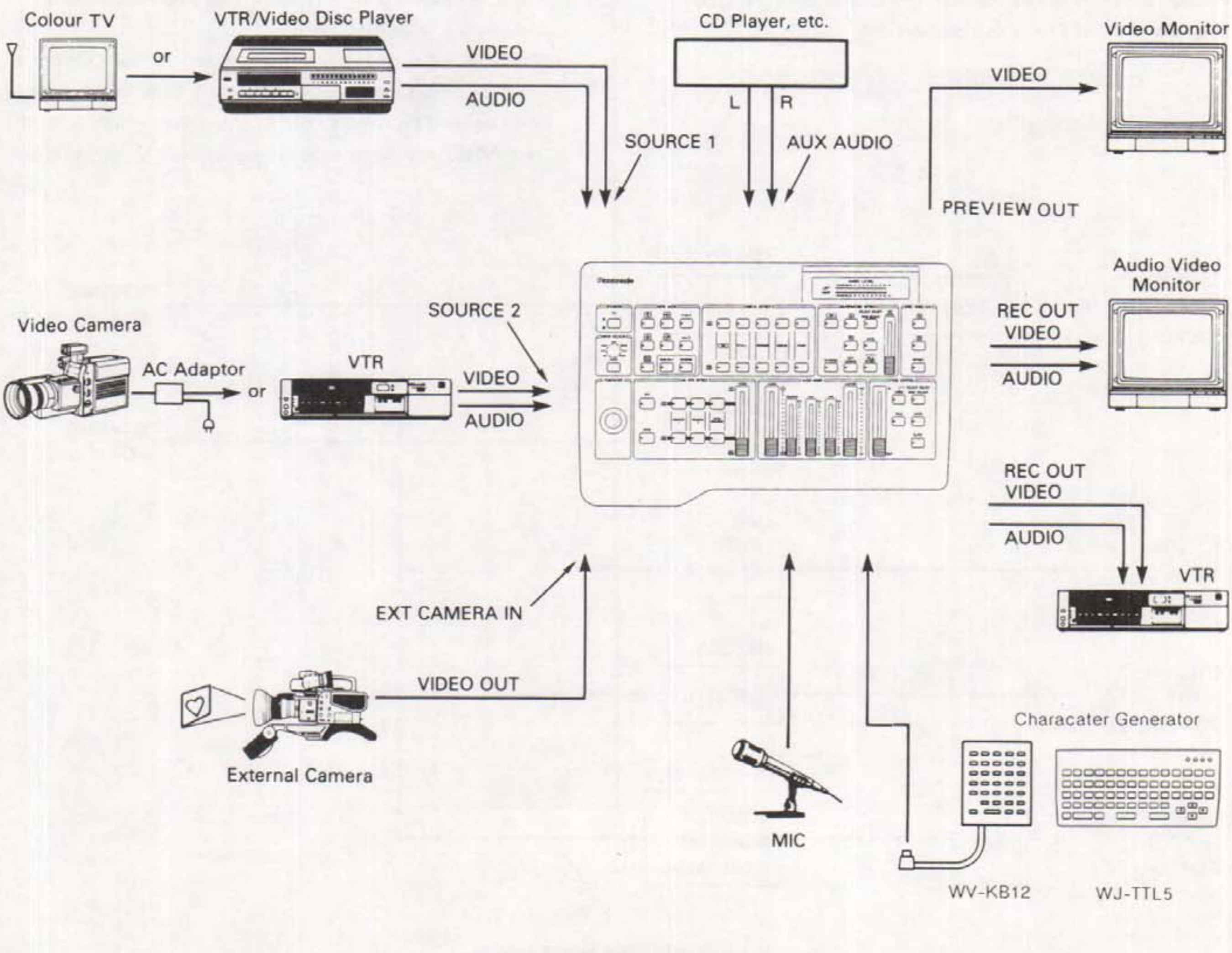
73. Power Cord

SYSTEM CONNECTION

Caution:

Keep the POWER ON/OFF switch turned OFF while making the connections.

1. Connect the coaxial cable with BNC connectors between the video output of the VTR, Video Disc Player, TV Tuner Output or Video Camera and the SOURCE 1 COMP. IN connector on the rear panel of the Digital AV Mixer or connect Y/C cable (4 pin) between VTR and the SOURCE 1 Y/C Video Input Connector on the rear panel of the Digital AV Mixer.
2. Connect the audio cable with pin plugs between the audio output of the VTR, Video Disk Player, TV Tuner Output or Video Camera and the SOURCE 1 AUDIO IN connectors on the rear panel of the Digital Av Mixer.
3. Connect the coaxial cable or Y/C cable (4 pin) and audio cable for the SOURCE 2 inputs of the Digital AV Mixer in the same manner as steps 1 and 2 above.
4. Connect the coaxial cable with BNC connectors between the video output of the external camera (B/W or colour camera for superimposing) and the EXT CAMERA IN connector of the Digital AV Mixer.
5. If the Character Generator WV-KB12 or WJ-TTL5 (sold separately) is used, connect the 10-pin cable connector of the Character Generator to the TITLE connector of the Digital AV Mixer.
6. If an auxiliary audio source is required, connect the audio cable with pin plugs between the audio output of the audio source (CD player, Tape Recorder or Record Player) and the AUX IN connectors of the Digital AV Mixer.
7. If necessary,connect the microphone cable with a tip-ring-sleeve type or tip-sleeve type phone plug to the MIC input connector of the Digital AV Mixer.
8. For previewing the image, connect the coaxial cable with BNC connectors between the PREVIEW OUT connector of the Digital AV Mixer and the VIDEO IN connector of a video monitor.
9. For recording, connect the coaxial cables with BNC connectors (Y/C cable) between the REC VIDEO OUT connectors of the Digital AV Mixer and the VIDEO IN connectors of the VTR and Video Monitor.
10. For recording, connect the audio cable with pin plugs between the REC AUDIO OUT connectors of the Digital AV Mixer and the AUDIO IN connectors of the VTR and Video Monitor.



System Connections

CIRCUIT DESCRIPTION

1. POWER BOARD

This board receives AC power through power cord and supply it to the Regulator board in order to make +5V DC, +12V DC and -12V DC.

The regulated DC powers from the Regulator board are supplied to this board again and removed the noise on the DC power line by filter consisting of capacitor and inductor.

The DC powers thus obtained are fed to the other circuit board.

2. REGULATOR BOARD

This board receives AC power from the Power board and regulates +5V DC, +12V DC and -12V DC powers.

When the power switch on the Power board is turned ON, AC power is rectified by D1, DC appears at cathodes side of D1 and motive current for switching transistor Q2 is fed through R2 and r3 and turning Q2 ON.

As a result, the voltage is applied to the primary winding (connecting between pins P2 and P1) of T1 and the bias voltage is generated at the bias coil (connecting between pins B2 and B1) of T1 due to induction.

3. REAR PANEL BOARD

3-1 Input Signal Section

This board receives all input signals supplied to this mixer and sends them to the Main board for video signals, the Switch board for audio signals.

3-1-1 Composite Video Signal

The composite video signal supplied from the composite video input connector CN1 on the rear panel is fed to the filters through buffer Q1. The low pass filter CF1 passes through luminance (Y) signal only and sends it to the Main board. The band pass filter CF2 passes through chrominance (c) signal (4.43MHz : PAL, 3.58MHz : NTSC component) only and sends it to the Main board.

3-1-2 Y/C Signal

The Y and C signals supplied from the Y/C video input connector on the Rear Panel are fed to the Main board through buffer Q4 and Q5 respectively.

3-1-3 Video Signal for External Video Camera

When the external camera is connected to the Composite Video External Camera Input Connector CN8, the composite video signal is supplied to the 4.43MHz Trap (PAL), 3.58MHz Trap (NTSC) and luminance (Y) signal only is sent through

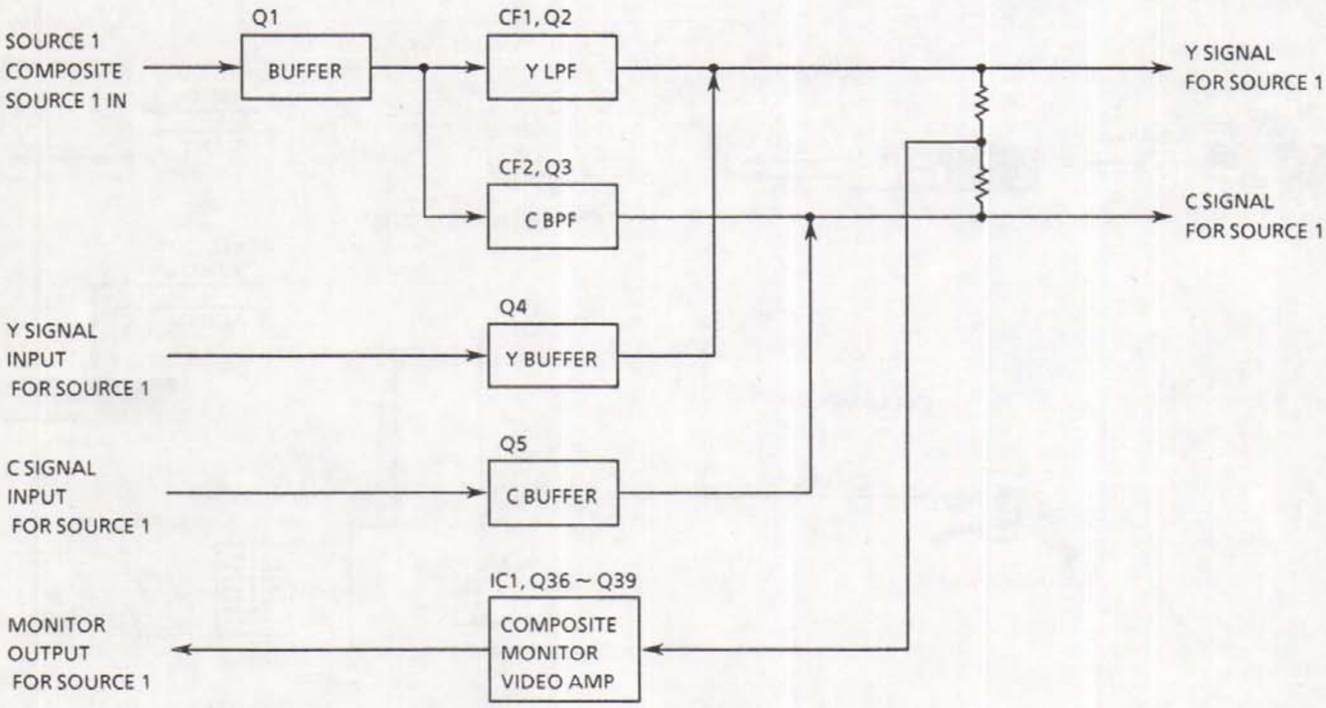


Fig. 3-1 Input Signal Section

buffer Q32 to the Main board for the key signal in the superimpose mode.
When the external camera is connected to the Y/C External Camera Input Connector SK5, the luminance (Y) signal only is sent to the Main board through buffer Q33 and pin 11 of CN11 for the key signal in the superimpose mode.

3-2 Output Signal Section

This board receives the effected Y and C signals from the Main board and converts it into the composite video signal.

3-2-1 Y/C Recording Video Output Signal

The luminance (Y) signal obtained at pin 7 of CN11 is sent through the amplifier consists of Q17 to Q19 and Q34 to the Y/C Recording Video Output Connector as Y signal.
The chrominance (c) signal obtained at pin 9 of CN11 is supplied through the amplifier consists of Q20 to Q23 to the Y/C Recording Video Output Connector as C signal.

3-2-2 Composite Recording Video Output Signal

The Y signal obtained at pin 7 of CN11, the C signal obtained at pin 9 of CN11 are sent to the buffer Q30 and Q29 respectively and they are mixed at the base of Q35 in order to make a composite video signal. The composite video signal thus obtained at the emitter of Q35 is fed through the amplifiers IC3 and Q24 to Q27 to the Recording Video Output Connector on the Rear panel.

3-2-3 Source (Monitor) 1 and 2 Video Output Signal

The Y and C signals made by composite video signal or supplied from the Y/C Video Input Connector are mixed at the cross point of R10 and R11 in order to make a composite video signal and it is sent to the Video Output Connector CN2 through the amplifier consists of IC1 and Q36 to Q39.

4. SWITCH BOARD

This board contains the key scanning section and the audio signal control/mixing section.

4-1 Key Scanning Section

This circuit sends out all control signals to the Main board by pressing the switches on this board. At the same time, all LEDs lights by pressing the switches on this board.

4-2 Audio Signal Section

This circuit receives audio signals and sends them out to the Rear board by mixing them and by adjusting their levels.

a. VR1 (AUDIO CONTROL)

This control is used to balance the mixed audio signal fed to SOURCE 1 input connector and the signal fed to SOURCE 2 input connector.

b. VR2 (SOURCE LEVEL CONTROL)

This control is the overall attenuator for the mixed AUDIO 1 and AUDIO 2 sound.

C. VR3 (AUX AUDIO LEVEL CONTROL)

This control is the input attenuator for the auxiliary audio signal fed to the Auxiliary Audio Input Connectors.

d. VR4 (AUDIO MASTER LEVEL CONTROL)

This control is the overall attenuator for the Audio Mixer.

e. VR11 (MIC LEVEL CONTROL)

This control is the attenuator for the microphone signal fed to the Microphone Input Jack.

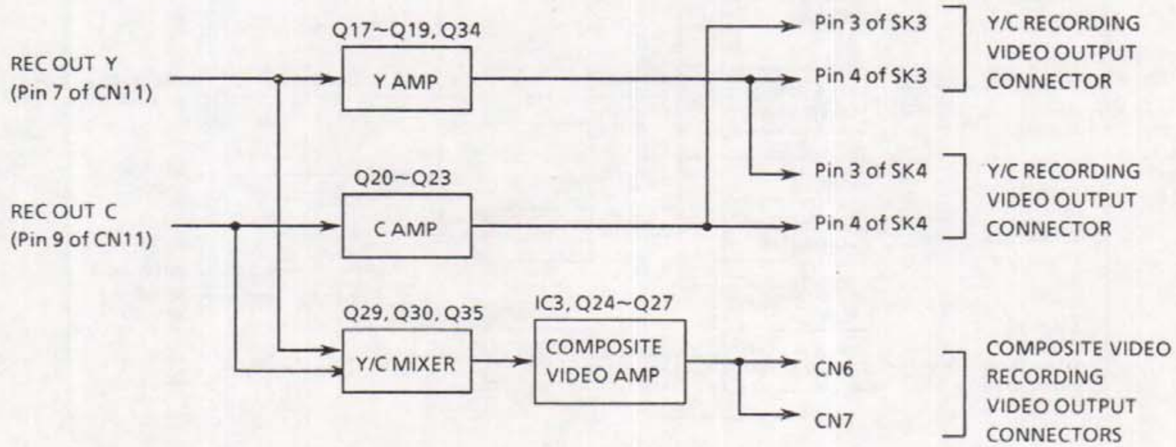


Fig. 3-2 Output Signal Section

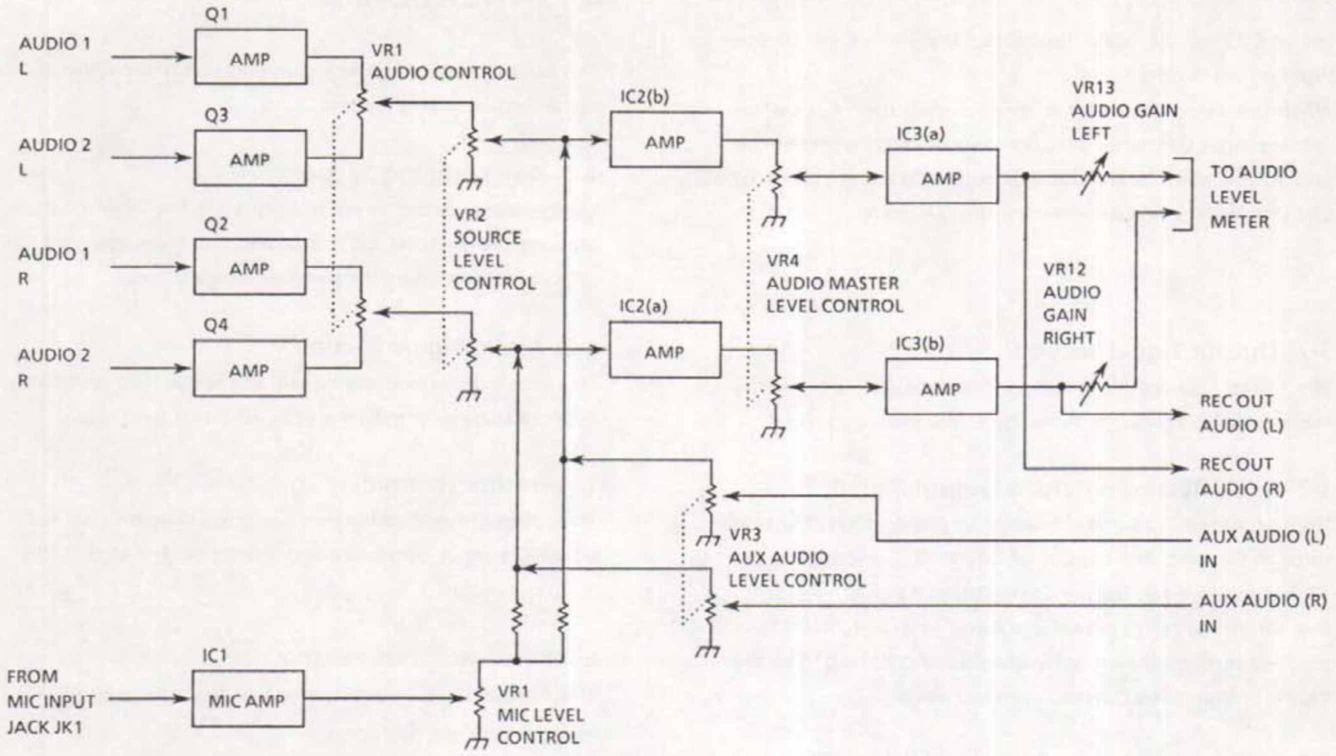


Fig. 4-1 Audio Signal Section

5. MAIN BOARD

5-1 Analog Signal Section

5-1-1 A/D Converter Circuit

This circuit generates Y, R-Y & B-Y signals from the VIDEO 1 and 2 and separates composite sync signals from them as shown in the figure 5-2.

5-1-2 D/A Converter Circuit

This circuit receives 8 bits digital signals and converts them into analog signals as shown in the figure 5-1.

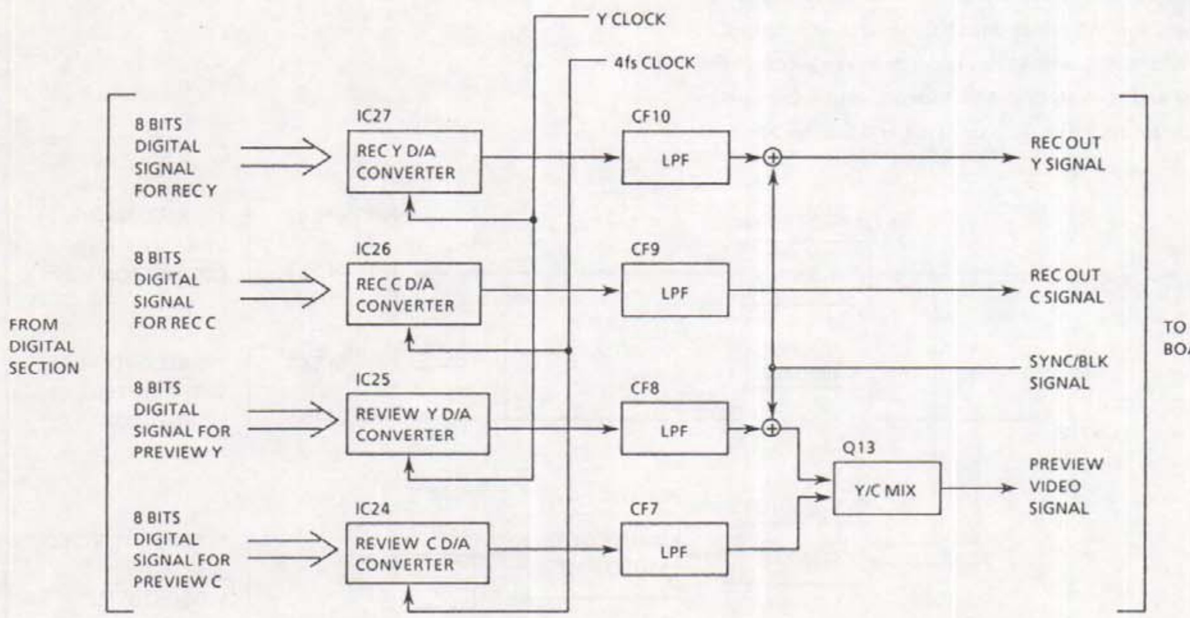


Fig. 5-1 D/A Converter Circuit

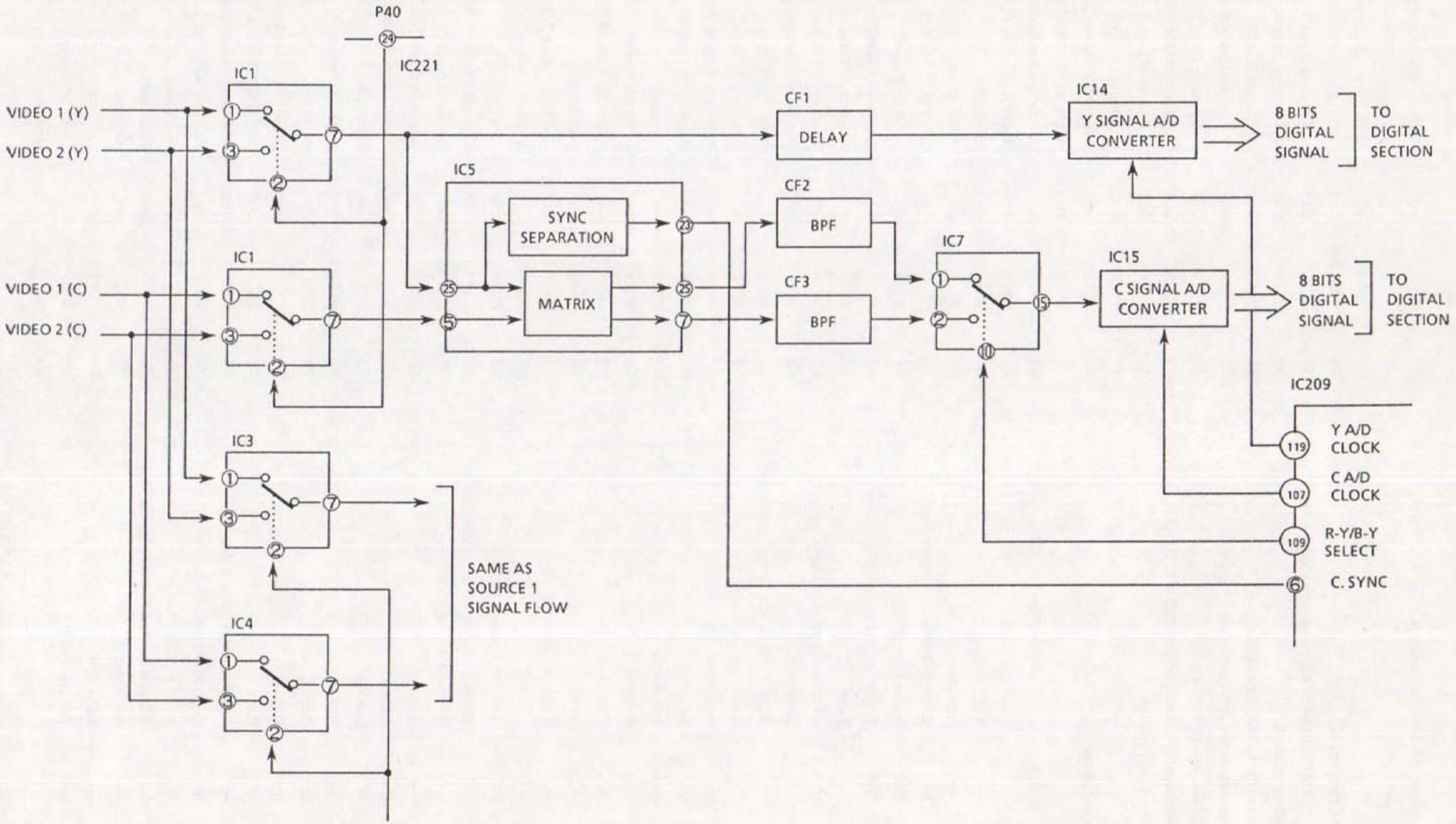


Fig. 5-2 A/D Converter Circuit

5-2 Digital Signal Section

This circuit consisting of the following IC's and their functions are as follows.

5-2-1 Memory Control IC

Memory Control IC (MN53040LVX3) has the following function and generator inside it.

(a) Clock Pulse Generator for A/D Converter
(b) Clamp Pulse Generator for A/D Converter
(c) Blanking Signal Generator for Decoder
(d) Control Pulse Generator for Memory IC (M5M4C500L)
(e) Picture in Picture Function

Pin identification is as follows.

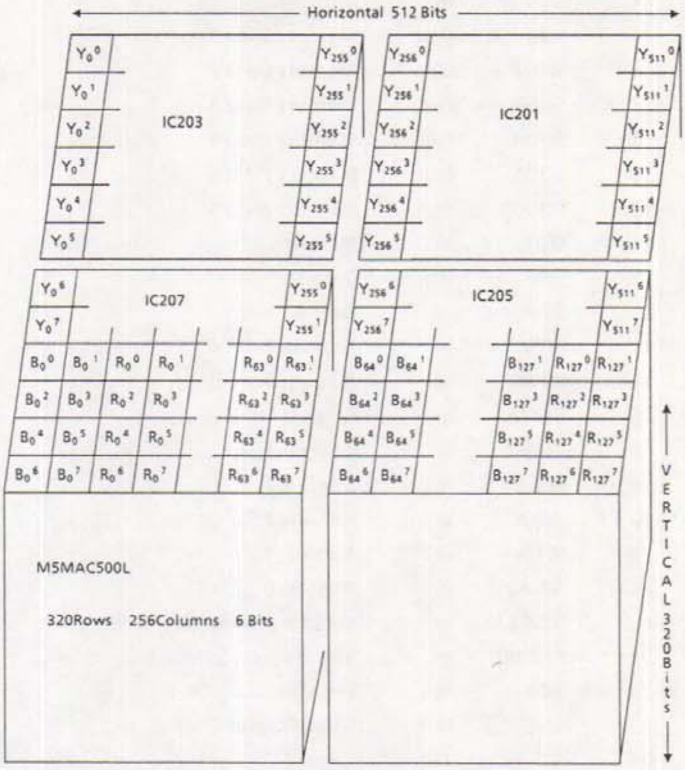
Pin No.	Pin Name	In/Out	Description
1	VCO	----	Not Used
2	VSS	----	Ground
3	WPC	Out	Write PLL Phase Comparator
4	WCLMP	Out	Write Clamp Pulse
5	WHBLK	Out	Write Horizontal Blanking Pulse
6	EXSYNC	In	External Sync from Sync Separator
7	ST	In	Strobe Pulse for Data Latch Gate
8	REG0	In	Register 0
9	REG1	In	Register 1
10	REG2	In	Register 2
11	REG3	In	Register 3
12	D0	In	Data 0
13	D1	In	Data 1
14	BS	In	B ch/A ch Select (H : B ch, L : Ach)
15	VDD	In	+ 5V DC Power
16	HIGH	In	Resolution High/Low Control (H : 14.3MHz, L : 9.6MHz)
17	VSS	----	Ground
18	D2	In	Data 2
19	D3	In	Data 3
20	D4	In	Data 4
21	D5	In	Data 5
22	D6	In	Data 6
23	D7	In	Data 7
24	V	In	Read Vertical Drive Pulse
25	H	In	Read Horizontal Drive Pulse
26	HS	In	Read H. Reset Pulse
27	YCLK	In	Y Clock for A/D Converter
28	YCLK	----	Not Used
29	RCLK	----	Not Used
30	VSS	----	Ground
31	FIELD	In	Field/Frame Mode Select (H : Field, L : Frame)
32	RST	in	Reset for Initialize
33	ANOTH	Out	Picture in Picture Pulse
34	YCD7	Out	Y. Chroma Data 7
35	YCD6	Out	Y. Chroma Data 6
36	YCD5	Out	Y. Chroma Data 5
37	YCD4	Out	Y. Chroma Data 4
38	YCD3	Out	Y. Chroma Data 3
39	YCD2	Out	Y. Chroma Data 2
40	YCD1	Out	Y. Chroma Data 1
41	YCD0	Out	Y. Chroma Data 0
42	MC3	In	Memory Chroma Data 3
43	MC2	In	Memory Chroma Data 2
44	MC1	In	Memory Chroma Data 1
45	MC0	In	Memory Chroma Data 0
46	VSS	----	Ground
47	PAL	In	NTSC or PAL (H : PAL, L : NTSC)
48	VDD	In	+ 5V DC Power
49	MY7	In	Memory Y Data 7
50	MY6	In	Memory Y Data 6
51	MY5	In	Memory Y Data 5
52	MY4	In	Memory Y Data 4
53	MY3	In	Memory Y Data 3
54	MY2	In	Memory Y Data 2
55	MY1	In	Memory Y Data 1
56	MY0	In	Memory Y Data 0
57	VSS	----	Ground
58	VDD	In	+ 5V DC Power
59	OEFP3	Out	Output Enable 3 (Positive)
60	OEFP2	Out	Not used
61	OEFP1	Out	Output Enable 1 (Positive)
62	OEFN3	Out	Output Enable 3 (Negative)
63	OEFN2	Out	Not used
64	OEFN1	Out	Output Enable 1 (Negative)
65	SOC3	Out	Serial Output Clock 3
66	SOC2	Out	Serial Output Clock 2
67	SOC1	Out	Serial Output Clock 1
68	VSS	----	Ground
69	VDD	In	+ 5V DC Power
70	SIC3	----	Not Used
71	SIC2	Out	Serial Input Clock 2
72	SIC1	Out	Serial Input Clock 1
73	RAS	Out	Row Address Set Pulse
74	CAS	Out	Column Address Set Pulse
75	A0	Out	Address 0
76	A1	Out	Address 1
77	VSS	----	Ground
78	TEST	In	Ground
79	VDD	In	+ 5V DC Power
80	A2	Out	Address 2

81	A3P	Out	Address 3 (Positive)
82	A3N	Out	Address 3 (Negative)
83	A4	Out	Address 4
84	A5	Out	Address 5
85	A6	Out	Address 6
86	A7	Out	Address 7
87	CTM3	Out	Chroma Data 3
88	CTM2	Out	Chroma Data 2
89	CTM1	Out	Chroma Data 1
90	CTM0	Out	Chroma Data 0
91	YTM7	Out	Y Data 7
92	YTM6	Out	Y Data 6
93	YTM5	Out	Y Data 5
94	YTM4	Out	Y Data 4
95	YTM3	Out	Y Data 3
96	YTM2	Out	Y Data 2
97	YTM1	Out	Y Data 1
98	YTM0	Out	Y Data 0
99	CAD7	In	A/D Chroma Data 7
100	CAD6	In	A/D Chroma Data 6
101	CAD5	In	A/D Chroma Data 5
102	CAD4	In	A/D Chroma Data 4
103	CAD3	In	A/D Chroma Data 3
104	CAD2	In	A/D Chroma Data 2
105	CAD1	In	A/D Chroma Data 1
106	CAD0	In	A/D Chroma Data 0
107	CADCK	Out	Clock for Chroma A/D Converter
108	VDD	In	+5V DC Power
109	CSL	Out	Clock for R-Y, B-Y Switching
110	VSS	----	Ground
111	YAD7	In	A/D Y Data 7
112	YAD6	In	A/D Y Data 6
113	YAD5	In	A/D Y Data 5
114	YAD4	In	A/D Y Data 4
115	YAD3	In	A/D Y Data 3
116	YAD2	In	A/D Y Data 2
117	YAD1	In	A/D Y Data 1
118	YAD0	In	A/D Y Data 0
119	YADCK	Out	Clock for Y A/D Converter
120	WHR	----	Not Used
121	2S	----	Not Used
122	SOR	----	Not Used
123	VDD	In	+5V DC Power
124	VCO	In	Voltage Controlled Oscillator for Write Clock

5-2-2 Memory IC

The capacity of Memory IC (YWM5M4C500L) is 6(Graduation) x 256(Horizontal) x 320(Scanning line) (Max) = 491520 bits/chip.

The assignment of 8 memories is as follows.



Assignment of DRAM for 1 Field

	Left picture	Right picture
Odd Field	IC203 (Y1 ~ Y6) IC207 (Y7, Y8, C ~ C4)	IC201 (Y1 ~ Y6) IC205 (Y7, Y8, C ~ C4)

	Left picture	Right picture
Even Field	IC212 (Y1 ~ Y6) IC216 (Y7, Y8, C ~ C4)	IC210 (Y1 ~ Y6) IC214 (Y7, Y8, C ~ C4)

Fig. 5-3 Assignment of Memory IC

Pin identification is as follows.

Pin No.	Pin Name	In/Out	Description
1	VSS	---	Ground
2	SID1	In	Data 1
3	SID2	In	Data 2
4	SID3	In	Data 3
5	SOD1	Out	Memory Data 1
6	SOD2	Out	Memory Data 2
7	SOD3	Out	Memory Data 3
8	SOD4	Out	Memory Data 4
9	SOD5	Out	Memory Data 5
10	SOD6	Out	Memory Data 6
11	SID4	In	Data 4
12	SID5	In	Data 5
13	SID6	In	Data 6
14	IR7/A7	In	Address 7
15	IR6/A6	In	Address 6
16	IR5/A5	In	Address 5
17	IR4/A4	In	Address 4
18	IR3/A3	In	Address 3
19	IR2/A2	In	Address 2
20	IR1/A1	In	Address 1
21	A8/A0	In	Address 0
22	IRS/CAS	In	Column Address Set Pulse
23	RAS/IRE	In	Row Address Set Pulse
24	SIC	In	Serial Input Clock
25	SOC	In	Serial Output Clock
26	SIE	----	Ground
27	SOE	In	Output Enable-1 (Positive)
28	VCC	In	+ 5V DC Power

5-2-3 Wipe/Mix/Fade/Superimpose Control IC

This IC (MN53100LBG) has a following functions inside it.

(a) Digital Mixing Function
(b) Digital Fade Function
(c) Digital Encoder Function
(d) Superimpose Function
(e) Back Color Generator

Pin identification is as follows.

Pin No.	Pin Name	In/Out	Description
1	VSS	----	Ground
2	A0	In	Y. Chroma Data 0
3	A1	In	Y. Chroma Data 1
4	A2	In	Y. Chroma Data 2
5	A3	In	Y. Chroma Data 3
6	A4	In	Y. Chroma Data 4
7	A5	In	Y. Chroma Data 5
8	A6	In	Y. Chroma Data 6
9	A7	In	Y. Chroma Data 7
10	BSEL	In	Bch Select
11	BOD	In	Border
12	CHR	In	Character
13	BLCHR	In	Character Blanking (Edge)
14	ABSUP	Out	Superimpose
15	VDD	In	+ 5V DC power
16	YCLK	In	Y Clock for D/A Converter
17	VSS	----	Ground
18	RCLK	In	R Clock for D/A Converter
19	VSS	----	Ground
20	MD0	In	Memory Data 0
21	MD1	In	Memory Data 1
22	MD2	In	Memory Data 2
23	MD3	In	Memory Data 3
24	MD4	In	Memory Data 4
25	MD5	In	Memory Data 5
26	MD6	In	Memory Data 6
27	MD7	In	Memory Data 7
28	BCD0	In	Color Bar Data 0
29	BCD1	In	Color Bar Data 1
30	BCD2	In	Color Bar Data 2
31	VDD	In	+ 5V DC Power
32	VSS	----	Ground
33	REG0	In	Register 0
34	REG1	In	Register 1
35	REG2	In	Register 2
36	REG3	In	Register 3
37	D0	In	Data 0
38	D1	In	Data 1
39	D2	In	Data 2
40	D3	In	Data 3
41	D4	In	Data 4
42	D5	In	Data 5
43	D6	In	Data 6
44	D7	In	Data 7
45	ST1	In	Strobe
46	VSS	----	Ground
47	NCBLK	Out	Blanking Pulse (Nega)
48	VDD	In	+ 5V DC Power
49	VP	In	Vertical Pulse
50	F4SC	In	Subcarrier
51	LBSC	In	
52	LSW	In	
53	BFP	In	Burst Flug Pulse
54	CBLK	In	Composite Blanking
55	VDD	In	+ 5V DC Power

56	VSS	----	Ground
57	TEST0	----	Not Used
58	TEST1	----	Not Used
59	TEST2	----	Not Used
60	PRVC0	Out	Preview C0
61	PRVC1	Out	Preview C1
62	VDD	In	+5V DC Power
63	VSS	----	Ground
64	PRVC2	Out	Preview C2
65	PRVC3	Out	Preview C3
66	PRVC4	Out	Preview C4
67	PRVC5	Out	Preview C5
68	PRVC6	Out	Preview C6
69	PRVC7	Out	Preview C7
70	VSS	----	Ground
71	VDD	In	+5V DC Power
72	PRVY0	Out	Preview Y0
73	PRVY1	Out	Preview Y1
74	PRVY2	Out	Preview Y2
75	PRVY3	Out	Preview Y3
76	PRVY4	Out	Preview Y4
77	VSS	----	Ground
78	PAL	In	PAL/NTSC Select
79	VDD	In	+5V DC Power
80	PRVY5	Out	Preview Y5
81	PRVY6	Out	Preview Y6
82	PRVY7	Out	Preview Y7
83	VSS	----	Ground
84	VDD	In	+5V DC Power
85	RECC0	Out	Recording C0
86	RECC1	Out	Recording C1
87	RECC2	Out	Recording C2
88	RECC3	Out	Recording C3
89	RECC4	Out	Recording C4
90	RECC5	Out	Recording C5
91	RECC6	Out	Recording C6
92	RECC7	Out	Recording C7
93	VDD	In	+5V DC Power
94	VSS	----	Ground
95	RECY0	Out	Recording Y0
96	RECY1	Out	Recording Y1
97	RECY2	Out	Recording Y2
98	RECY3	Out	Recording Y3
99	RECY4	Out	Recording Y4
100	RECY5	Out	Recording Y5
101	RECY6	Out	Recording Y6
102	RECY7	Out	Recording Y7
103	VSS	----	Ground
104	VDD	In	+5V DC Power
105	TD0	----	Not Used
106	TD1	----	Not Used
107	TD2	----	Not used
108	VDD	In	+5V DC Power
109	TD3	----	Not Used
110	VSS	----	Ground
111	TD4	----	Not Used
112	TD5	----	Not Used
113	TD6	----	Not Used
114	TD7	----	Not Used
115	B0	In	Bch Y/C 0
116	B1	In	Bch Y/C 1
117	B2	In	Bch Y/C 2
118	B3	In	Bch Y/C 3
119	B4	In	Bch Y/C 4
120	B5	In	Bch Y/C 5
121	B6	In	Bch Y/C 6
122	B7	In	Bch Y/C 7
123	ASEL	In	Ach Select
124	VDD	In	+5V DC Power

5-2-4 Wipe Pattern/Wipe Pattern Edge/ Character Edge Generator IC

This IC (MN53100LBH2) has a following function and generator inside it.

(a) Digital Wipe Pattern Generator
(b) Border/Shadow Generator for Character
(c) Border/Soft Wipe Generator for Wipe Pattern
(d) Phase Lock Loop (PLL) for Memory Read-out Clock
(e) Output for Color Bar Data

Pin identification is as follows.

Pin No.	Pin Name	In/Out	Description
1	VSS	----	Ground
2	EXWP	In	External Wipe Pattern
3	CHB	In	Character B
4	CHC	In	Character C
5	CH0	Out	Character 0H Delay
6	CH1	In	Character 1H Delay
7	CH2	In	Character 2H Delay
8	CH3	In	Character 3H Delay
9	CH4	In	Character 4H Delay
10	WP0	Out	Wipe Pattern
11	VSS	----	Ground
12	VDD	In	+5V DC Power
13	CLK	Out	Clock for Memory Read
14	VSS	----	Ground
15	CLK	In	Clock for Character

16	VDD	In	+ 5V DC Power
17	WP1	In	Wipe Pattern 1H Delay
18	WP2	In	Wipe Pattern 2H Delay
19	WP3	In	Wipe Pattern 3H Delay
20	WP4	In	Wipe Pattern 4H Delay
21	TEST0	----	Not Used
22	TEST1	----	Not Used
23	PC	Out	Phase Comparator for Read Clock PLL
24	OSC	In	Oscillator
25	VDD	In	+ 5V DC Power
26	VSS	----	Ground
27	OSC	Out	Oscillator
28	TEST2	----	Not Used
29	TEST3	----	Not Used
30	TEST4	----	Not Used
31	TEST5	----	Not Used
32	ST	In	Strobe for Data Latch Gate
33	REG0	In	Register 0
34	REG1	In	Register 1
35	REG2	In	Register 2
36	REG3	In	Register 3
37	VSS	----	Ground
38	TEST6	----	Not Used
39	VDD	In	+ 5V DC Power
40	D0	In	Data 0
41	D1	In	Data 1
42	D2	In	Data 2
43	D3	In	Data 3
44	D4	In	Data 4
45	D5	In	Data 5
46	D6	In	Data 6
47	D7	In	Data 7
48	V	In	Vertical Drive Pulse
49	H	In	Horizontal Drive Pulse
50	VDD	In	+ 5V DC Power
51	VSS	----	Ground
52	VCHRG	----	Not Used
53	HCHRG	----	Not Used
54	BC2	Out	Back Color Data 0
55	BC1	Out	Back Color Data 1
56	BC0	Out	Back Color Data 2
57	MD7	Out	Mix Data 7
58	MD6	Out	Mix Data 6
59	MD5	Out	Mix Data 5
60	MD4	Out	Mix Data 4
61	MD3	Out	Mix Data 3
62	VSS	----	Ground
63	RST	In	Reset
64	VDD	In	+ 5V DC Power
65	MD2	Out	Mix Data 2
66	MD1	Out	Mix Data 1
67	MD0	Out	Mix Data 0
68	CHA	In	Character A
69	BLCHR	Out	Character Blanking Output
70	CHR	Out	Character
71	BOD	Out	Border for Wipe Pattern
72	TP8	Out	Mosaic Wipe
73	TP7	In	Test Data 7
74	TP6	In	Not Used
75	VDD	In	+ 5V DC Power
76	VSS	----	Ground
77	TP5	----	Not Used
78	TP4	----	Not Used
79	TP3	----	Not Used
80	TP2	----	Not Used
81	TP1	----	Not Used
82	TP0	----	Not Used
83	TED8	----	Not used
84	TED7	----	Not Used
85	TED6	----	Not Used
86	TED5	----	Not used
87	VDD	In	+ 5V DC Power
88	PAL	In	NTSC or PAL (H : PAL, L : NTSC)
89	VSS	----	Ground
90	TED4	----	Not Used
91	TED3	----	Not Used
92	TED2	----	Not Used
93	TED1	----	Not used
94	TED0	----	Not used
95	VSS	In	Wipe Pattern A
96	HREF	In	Wipe Pattern B
97	HRST	Out	Read H.Reset Pulse
98	RCLK	----	Horizontal Reference for PLL
99	HIGH	In	Resolution High/Low Control
100	VDD	In	+ 5V DC Power

5-2-5 Sync Generator IC

This IC (MN676021PPS) generates all pulses which are used for synchronization of video 1 and 2 signal.

Pin identification is as follows.

Pin No.	Pin Name	In/Out	Description
1	VDD1	In	+ 5V DC Power
2	VSS1	----	Ground
3	EXfscl	In	External Subcarrier
4	4fscOSCI	In	Ground
5	4fscOSCO	----	Not Used
6	SC1	Out	Subcarrier 1
7	SC2	----	Not Used
8	BSC	----	Not Used
9	VPCO	----	Not Used
10	EXT/INT	In	External or Internal
11	CP1	In	Line Switch Cont
12	HR	In	Horizontal Reset
13	VR	In	Vertical Reset
14	EX910fHI	In	External Frequency
15	SW4	----	Not Used
16	SW3	----	Not Used
17	SW2	----	Not Used
18	SW1	----	Not Used
19	BF	Out	Burst Flag Pulse
20	WBLK	----	Not Used
21	CP2	----	Not Used
22	CP1V	----	Not Used
23	BLK	Out	Composite Blanking
24	WHD	Out	Wide Horizontal Drive
25	VP	Out	Vertical Pulse
26	SYNC	Out	Sync
27	VSS2	----	Ground
28	VDD2	In	+ 5V DC Power

5-2-6 External Sync Generator IC

This IC (MN53007LVW1) generates all pulses which are synchronized with the external camera.

Pin identification is as follows.

Pin No.	Pin Name	In/Out	Description
1	SCOSC	Out	
2	NC	----	Not used
3	FSC4	Out	Subcarrier
4	NC	----	Not Used
5	NC	----	Not Used
6	FREQ	----	Not Used
7	PCR	----	Not Used
8	H04	----	Not Used
9	H05	----	Not Used
10	HREF	----	Not Used
11	NC	----	Not Used
12	NC	----	Not Used
13	NC	----	Not Used
14	EXSYNC	In	External Sync
15	PAL	In	NTSC or PAL (H : PAL, L : NTSC)
16	RST	In	Reset input
17	VDD	In	+ 5V DC Power
18	NC	----	Not Used
19	V	In	VP input
20	H	In	Wide Horizontal Drive
21	IN	----	Not Used
22	NOUT	----	Not Used
23	HS	In	Horizontal Start Pulse
24	HPCO	Out	H. Phase Comparator
25	NC	----	Not used
26	VR	Out	Vertical Reset
27	LSWCNT	Out	Latch Switch Control
28	EXT	Out	External or Internal (EXT : H)
29	NC	----	Not Used
30	NC	----	Not Used
31	MONIT3	----	Not Used
32	MONIT2	----	Not Used
33	MONIT1	----	Not Used
34	NC	----	Not Used
35	NC	----	Not Used
36	TEST3	----	Not Used
37	TEST2	----	Not Used
38	TEST1	----	Not Used
39	VSS	----	Ground
40	NC	----	Not Used
41	SC	----	Not used
42	NC	----	Not Used
43	HSCPC	Out	H. SC Phase Control
44	SCOSC	In	SC Oscillator

ADJUSTMENT PROCEDURE

1. Test Equipment Required

- Oscilloscope (Dual trace, Delayed sweep, 50MHz bandwidth)
- Digital voltmeter
- Frequency counter (More than 7 digits)
- Underscanned color video monitor
- Test signal generator (Color bar and Cross hatch signals)
- Waveform monitor
- Vectorscope
- Audio generator

2. Disassembling Procedure for adjustment

- Remove sixteen screws holding the edge of top cover and open the top cover.

3. Connection

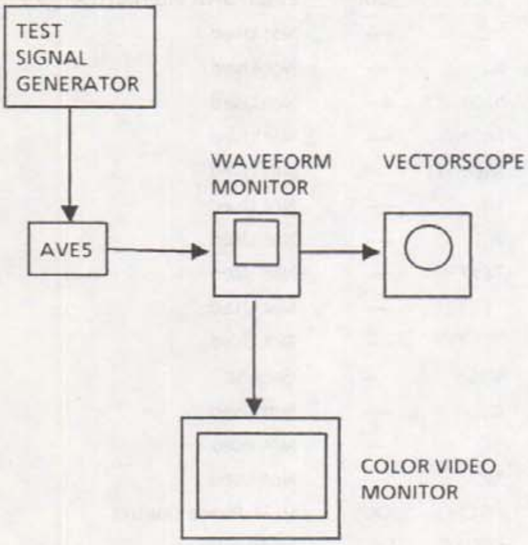


Fig. 3-1

- Connect the coaxial cable between the REC VIDEO OUT 1 connector on the rear panel of WJ-AVE5 and the VIDEO IN connector of the waveform monitor.
- Connect the coaxial cable between the other VIDEO IN connector of the waveform monitor and the VIDEO IN connector of the vectorscope.
- Terminate the other VIDEO IN connector of the vectorscope with the 75-ohm terminator.
- Connect the coaxial cable between the VIDEO OUT connector of the waveform monitor and the VIDEO IN connector of the color video monitor.
- Terminate the other VIDEO IN connector of the color video monitor with 75 ohms.

4. Adjustment Procedure

- Refer to LOCATION OF TEST POINTS AND ADJUSTING CONTROLS on pages 24 and 25 for adjustment.

(1) +5V adjustment

Test point:	**TP37 (+5V)**	**Main board**
Adjust:	**VR1 (+5V ADJ)**	**Power board**

- Connect the digital voltmeter to TP37 on the Main board.
- Adjust VR1 on the Power board for 5.0V ± 0.02V.

(2) FSC adjustment

Test point:	**TP211 (FSC)**	**Main board**
Adjust:	**VR201 (FSC)**	**Main board**

- Connect the frequency counter to TP211 on the Main board.
- Adjust VR201 on the Main board for 4.433619MHz ± 5Hz (PAL), 3.579545MHz ± 5Hz (NTSC).

(3) Read Voltage Controlled Oscillator (VCO R) adjustment

Test point:	**TP204 (R VCO)**	**Main board**
Adjust:	**L215 (VCO R)**	**Main board**

- Connect the digital voltmeter to TP204 on the Main board.
- Adjust L215 on the Main board for 2.8V ± 0.1V.

(4) Write Voltage Controlled Oscillator (VCO W) adjustment

Test points:	**TP208 (W VCO A)**	**Main board**
	TP206 (W VCO B)	**Main board**
Adjusts:	**L202 (W VCO A)**	**Main board**
	L206 (W VCO B)	**Main board**

- Connect the coaxial cable between the VIDEO OUT connector of the test signal generator and the SOURCE 1 IN (VIDEO) connector on the rear panel of the mixer.
- Supply the composite color bar signal to the mixer from the test signal generator.
- Connect the digital voltmeter to TP208 on the Main board.
- Adjust L202 on the Main board for 2.8V ± 0.1V.
- Disconnect the coaxial cable which is connected to the SOURCE 1 IN (VIDEO) connector on the rear panel of the mixer, and connect it to the SOURCE 2 IN (VIDEO) connector on the rear panel of the mixer.

- Connect the digital voltmeter to TP206 on the Main board.
- Adjust L206 on the Main board for 2.8V ± 0.1V.

(5) F VCXO adjustment

Test points:	**TP401 (VCO A)**	**Main board**
	TP402 (VCO B)	**Main board**
Adjusts:	**CT1 (VCO A)**	**Main board**
	CT2 (VCO B)	**Main board**

- Disconnect the coaxial cable from the SOURCE 1 IN (VIDEO) or SOURCE 2 IN (VIDEO) connector on the rear panel.
- Connect the frequency counter to TP401 on the Main board.
- Adjust CT1 on the Main board for 4.433619MHz ± 10Hz (PAL), 3.579545 MHz ± 10Hz (NTSC).
- Connect the frequency counter to TP402 on the Main board.
- Adjust CT2 on the Main board for 4.433619MHz ± 10Hz (PAL), 3.579545 MHz ± 10Hz (NTSC).

(6) Burst gate pulse (BGP) width adjustment

Test points:	**TP1 (BFG-A)**	**Main board**
	TP2 (SYNC-A)	**Main board**
	TP12 (SYNC-B)	**Main board**
	TP14 (BFG-B)	**Main board**
Adjusts:	**VR1 (BURST GATE A)**	**Main board**
	VR9 (BURST GATE B)	**Main board**

- Connect the coaxial cable between the VIDEO OUT connector of the test signal generator and the SOURCE 1 IN (VIDEO) connector on the rear panel of the mixer.
- Supply the composite color bar signal to the mixer from the test signal generator.
- Connect the oscilloscope to TP1 and TP2 on the Main board.
- Connect the external trigger input of oscilloscope to TP2 on the Main board and set the oscilloscope to H rate and expand the holizontal blanking period.
- Adjust VR1 on the Main board so that the duty of waveform at TP1 becomes 9μsec ± 0.1 μsec (PAL), 7.8 μsec ± 0.1 μsec (NTSC).
- Connect the coaxial cable to the SOURCE2 IN (VIDEO) connector and supply the composite color bar signal from the test signal generator.
- Connect the oscilloscope to TP14 and TP12 on the Main board.
- Connect the external trigger input of oscilloscope to TP12 on the Main board and set the oscilloscope to H rate and expand the holizontal blanking period.
- Adjust VR9 on the Main board so that the duty of waveform at TP14 becomes 9μsec ± 0.1 μsec (PAL), 7.8 μsec ± 0.1 μsec (NTSC).

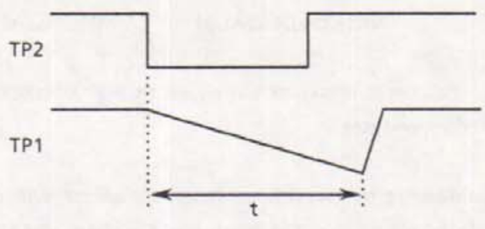


Fig 4-1

(7) Carrier balance adjustment

Test point:	**REC VIDEO OUT connector**	**Rear panel**
Adjusts:	**VR6 (CARRIER BAL A-1)**	**Main board**
	VR7 (CARRIER BAL A-2)	**Main board**
	VR14 (CARRIER BAL B-1)	**Main board**
	VR15 (CARRIER BAL B-2)	**Main board**

- Supply the composite color bar signal to te SOURCE 1 IN (VIDEO) connector.
- Set the GAIN control of vectorscope to maximum.
- Adjust VR6 and VR7 on the Main board so that the vector positions on the center of vectorscope and the carrier leak of the video signal on the waveform monitor becomes minimum.
- Supply the composite color bar signal to the SOURCE 2 IN (VIDEO) connector.
- Adjust VR14 and VR15 on the Main board so that the vector positions on the center of vectorscope and the carrier leak of the video signal on the waveform monitor becomes minimum.

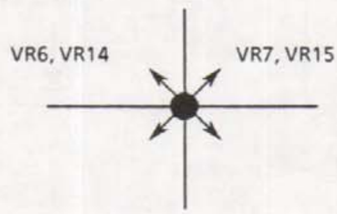


Fig 4-2

(8) Pedestal adjustment

Test point:	**REC VIDEO OUT connector**	**Rear panel**
Adjusts:	**VR8 (PEDESTAL A)**	**Main board**
	VR16 (PEDESTAL B)	**Main board**

- Supply the composite color bar signal to the SOURCE 1 IN (VIDEO) connector.

For PAL

- While observing the waveform monitor, adjust VR8 on the Main board so that the black bar is just touching to the blanking level. (Black level becomes 0mV $^{+14mV}_{-0mV}$)

For NTSC

- While observing the waveform monitor, adjust VR8 on the Main board so that the black level becomes 35mV ± 14mV.
- Supply the composite color bar signal to the SOURCE 2 IN (VIDEO) connector.

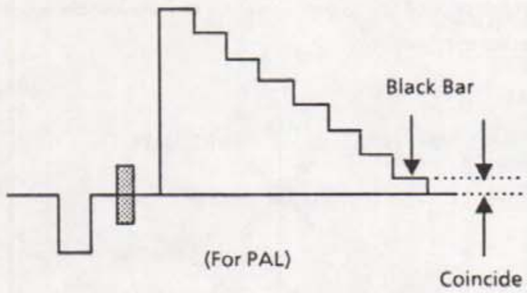
For PAL

- While observing the waveform monitor, adjust VR16 on the Main board so that the black bar is just touching to the blanking level. (Black level becomes 0mV $^{+14mV}_{-0mV}$)

For NTSC

- While observing the waveform monitor, adjust VR16 on the Main board so that the black level becomes 35mV ± 14mV.

CAUTION : for PAL Even if VR8 or VR16 is turned too much, the black bar will be touched to the blanking level. It therefore should be adjusted for just touching to the blanking level.



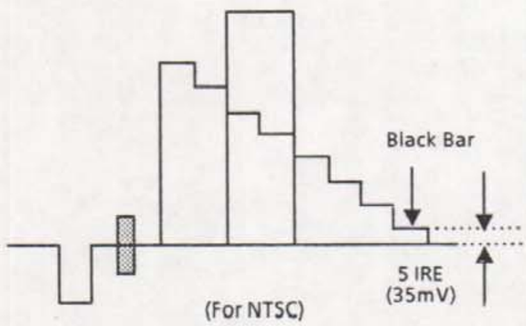
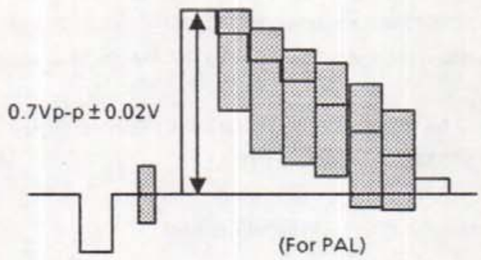


Fig 4-3

(9) Y gain adjustment

Test point:	**REC VIDEO OUT connector**	
Adjusts:	**VR4 (Y GAIN A)**	**Main board**
	VR12 (Y GAIN B)	**Main board**

- Supply the composite color bar signal to the SOURCE 1 IN (VIDEO) connector.
- While observing the waveform monitor, adjust VR8 on the Main board so that Y signal (white bar) level becomes 0.7Vp.p ± 0.02Vp.p (PAL), 100 IRE ± 3 IRE (NTSC).
- Supply the composite color bar signal to the SOURCE 2 IN (VIDEO) connector.
- While observing the waveform monitor, adjust VR12 on the Main board so that Y signal (white bar) level becomes 0.7Vp.p ± 0.02Vp.p (PAL), 100 IRE ± 3 IRE (NTSC).



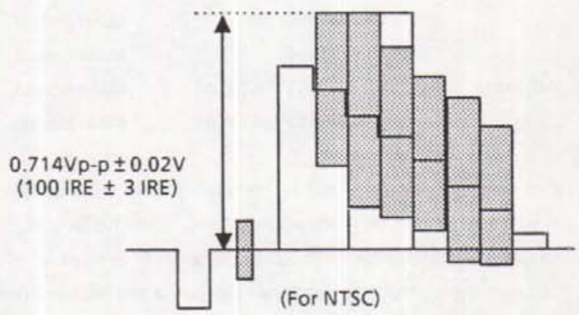


Fig 4-4

- Connect the coaxial cable to the SOURCE 2 IN (VIDEO) connector and SOURCE 1 IN (VIDEO) connector on the rear panel.
- Press the  switch on the Wipe Pattern selection switches for the horizontal wipe so that the pictures of A and B channel are displayed on the monitor screen.

- Adjust VR16 and VR12 on the Main board so that the diference between black and white levels of A and B channels become within 0.14mV (PAL), 2 IRE (NTSC).

CAUTION : When VR16 and VR12 are turned too much, the black and white bar will be supressed.

(10) Tint, chroma gain and B-Y gain adjustment

Test point:	**REC VIDEO OUT connector**	**Rear panel**
Adjusts:	**VR3 (TINT A)**	**Main board**
	VR2 (CHROMA GAIN A)	**Main board**
	VR5 (B-Y GAIN A)	**Main board**
	VR11 (TINT B)	**Main board**
	VR10 (CHROMA GAIN B)	**Main board**
	VR13 (B-Y GAIN B)	**Main board**

- Supply the composite color bar signal to the SOURCE 1 IN (VIDEO) connector.
- While observing the vectorscope, adjust VR3, VR2 and VR5 on the Main board so that the all vectors fall into their respective boxes.

Effect of controls

VR2 -- Chroma Gain (R-Y Gain)
VR3 -- Tint
VR5 -- B-Y Gain

- Supply the composite color bar signal to the SOURCE2 IN (VIDEO) connector.
- While observing the vectorscope, adjust VR11, VR10 and VR13 on the Main board so that the all vectors fall into their respective boxes.

Effect of controls

VR10 -- Chroma Gain (R-Y Gain)
VR11 -- Tint
VR13 -- B-Y Gain

- Press the  switch on the Wipe Pattern selection switches for the holizontal wipe so that the pictures of A and B channel are displayed on the monitor screen.
- Adjust VR2 and VR5 for A channel, VR10 and VR13 for B channel so that the difference between chroma gain of A and B channel becomes within 3%.
- Adjust VR3 for A channel, VR11 for B channel so that the difference between chroma phase of A and B channel becomes within 4°

(11) Horizontal phase adjustment

Test point:	**REC VIDEO OUT connector**	**Rear panel**
Adjust:	**VR502 (H.PHASE)**	**Main board**

- Supply the color bar signal to the SOURCE 1 and 2 IN (VIDEO) connector.
- Press the switch on the Wipe Pattern selection switches for the horizontal wipe so that the pictures of A and B channel are displayed on the monitor screen.
- While observing the waveform monitor, adjust VR502 on the Main board so that Y level of A channel becomes equal to that of B channel.

(12) REC OUT Y gain adjustment

Test point:	**REC VIDEO OUT connector**	**Rear Panel**
Adjust:	**VR20 (REC Y GAIN)**	**Main board**

- Supply the composite color bar signal to the SOURCE 1 IN (VIDEO) connector.
- Set the GAIN control of vectorscope to maximum.
- Adjust VR6 and VR7 on the Main board so that the vector positions on the center of vectorscope and the carrier leak of the video signal on the waveform monitor becomes minimum.
- While observing the waveform monitor, adjust VR20 on the Main board so that Yellow (white) level becomes 580mV ± 20mV (PAL), 83 IRE ± 3 IRE (NTSC).

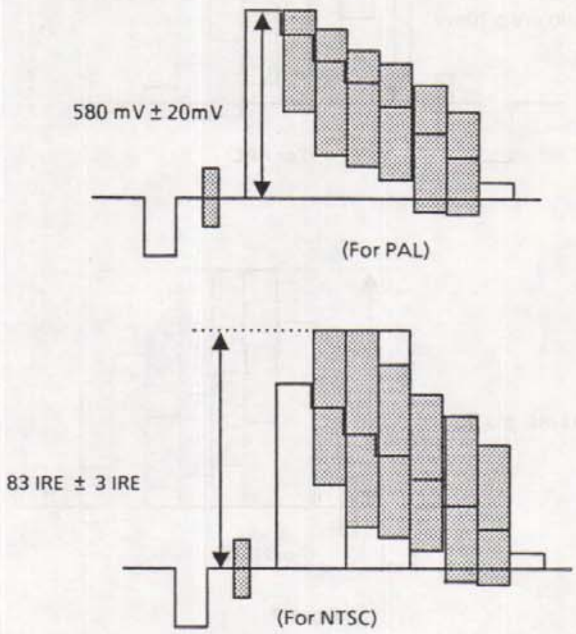


Fig. 4-5

(13) REC OUT C gain adjustment

Test point:	**REC VIDEO OUT connector**	**Rear Panel**
Adjust:	**VR19 (REC C GAIN)**	**Main board**

- Keep the connection and condition for step (12).
- While observing the waveform monitor, adjust VR19 on the Main board so that the burst level becomes 0.3V (PAL), 0.286V (NTSC).

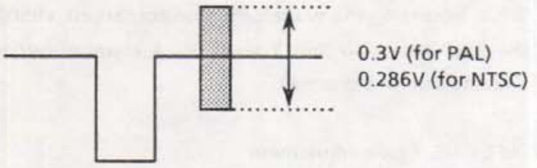


Fig. 4-6

(14) Preview Y gain adjustment

Test point:	**PREVIEW OUT connector**	**Rear Panel**
Adjust:	**VR18 (PREVIEW Y GAIN)**	**Main board**

- Keep the connection and condition for step (12).
- While observing the waveform monitor, adjust VR18 on the Main board so that Yellow (white) level becomes 580mV ± 20mV (PAL), 83 IRE ± 3 IRE (NTSC).

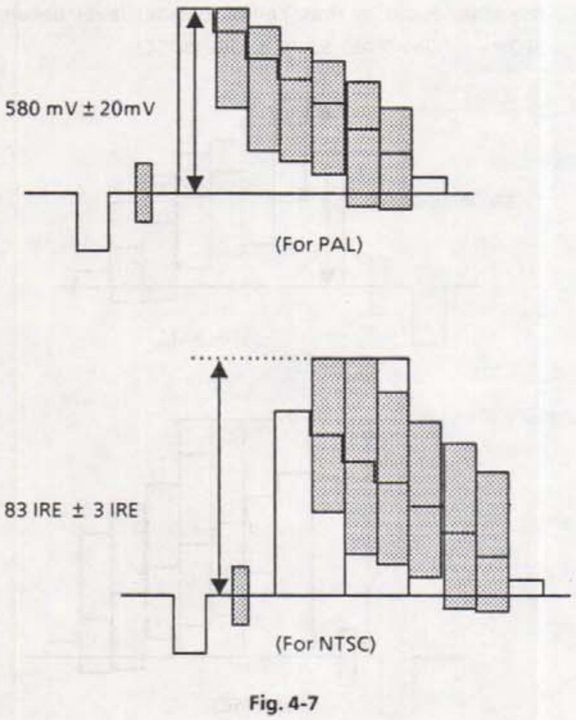


Fig. 4-7

(15) Preview C gain adjustment

Test point:	**PREVIEW OUT connector**	**Rear Panel**
Adjusts:	**VR17 (PREVIEW C GAIN)**	**Main board**

- Keep the connection and condition for step (12).
- While observing the waveform monitor, adjust VR17 on the Main board so that the burst level becomes 0.3V (PAL), 0.286V (NTSC).

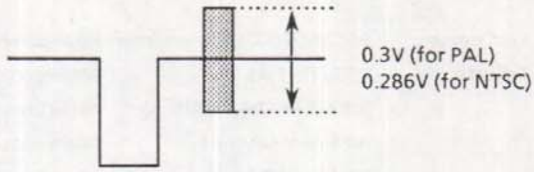


Fig. 4-8

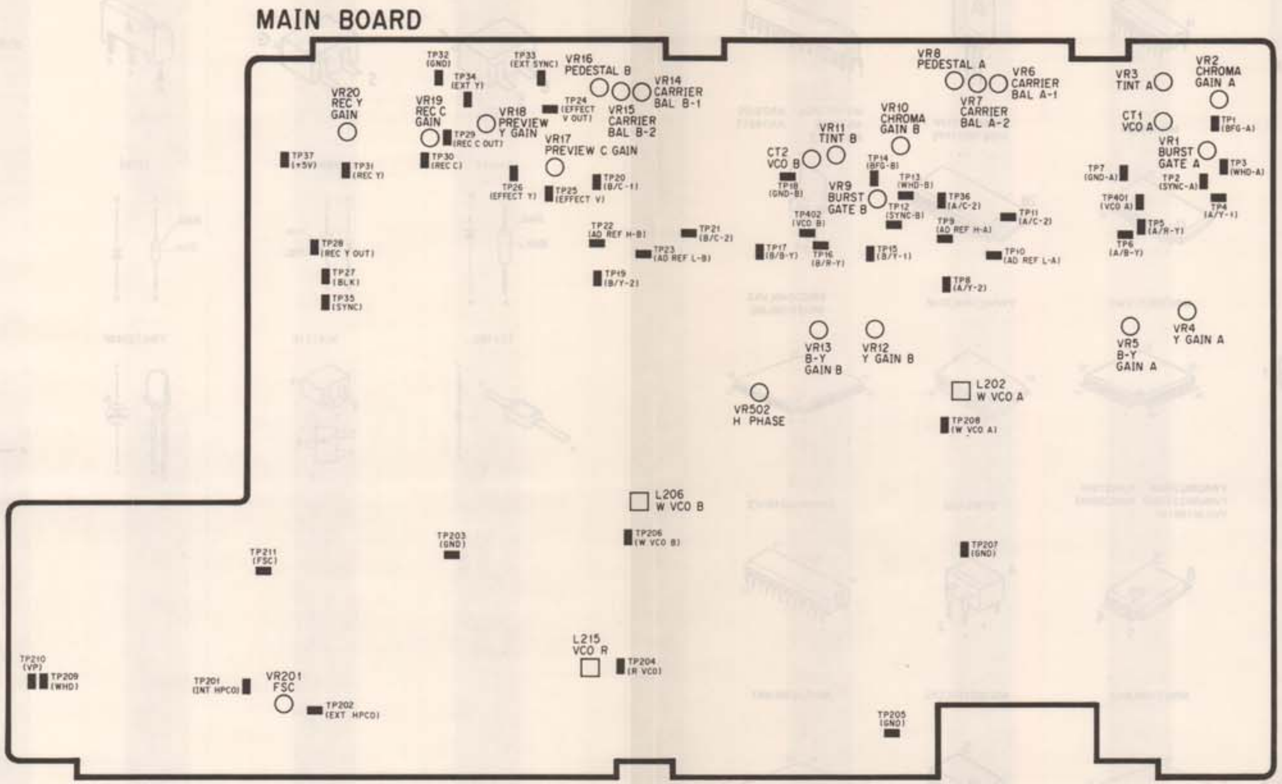
(16) Audio gain adjustment

Test points:	**REC AUDIO OUT connectors**	**Rear Panel**
Adjusts:	**VR13 (AUDIO RIGHT GAIN)**	**Switch board**
	VR12 (AUDIO LEFT GAIN)	**Switch board**

- Connect the audio cables with pin connector (RCA connectors) between the output terminal or connector of the low frequency test signal generator and the SOURCE 1 AUDIO L and INPUT connector of WJ-AVE5.
- Disconnect the audio cables from the SOURCE 2 AUDIO L and R INPUT connectors of WJ-AVE5.
- Supply the 1 Kz, -10dB (316mV rms) sinewave signal to the SOURCE 1 AUDIO L and INPUT connector of WJ-AVE5 from the test signal generator.
- Set the AUDIO Control (AUDIO 1 / AUDIO 2) to the AUDIO 1 end.
- Set the SOURCE level control (MAX / MIN) and the Audio Master Level Control (MAX / MIN).
- Set the Microphone Level Control (MAX / MIN) and the Auxiliary Audio Level Control (MAX / MIN) to the MIN end.
- Set the AUDIO level control (MAX / MIN) so that the REC AUDIO OUT L level becomes -6dB (PAL), -8dB (NTSC).
- Confirm that the all LEDs for left channel are lit on by turning VR12 fully counterclockwise, turn VR12 clockwise slowly and stop it at where the red LED for +2 point is off and LEDs from 0 point and lower are lit on.
- Confirm that the all LEDs for right channel are lit on by turning VR13 fully counterclockwise, turn VR13 clockwise slowly and stop it at where the red LED for +2 point is off and LEDs from 0 point and lower are lit on.

LOCATION OF TEST POINTS AND ADJUSTING CONTROLS

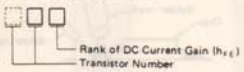
MAIN BOARD



CHIP COMPONENTS

1. Chip Transistor

The transistor number is indicated on the top surface of the chip transistor using two alphabet letters or one numerical and two alphabet letters.



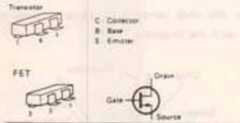
Transistor Number

Letter	Transistor No.	Letter	Transistor No.
A	2SB709	X	2SD602A
B	2SB709A	Y	2SD601
C	2SB710	Z	2SD601A
D	2SB710A	1Z	2SD1030
E	2SA1022	1N	2SK199
F	2SA1034	1O	2SK198
H	2SA1035	1A	2SB799
I	2SB792	1B	2SB814
K	2SC2778	1C	2SB902
P	2SD814	1F	2SK321
Q	2SD813	1L	2SK247
R	2SC2480	1K	2SK316
S	2SC2405	1M	2SJ84
T	2SC2406	1T	2SC3077
U	2SC2404	1X	2SC2845
V	2SC2295	2B	2SK374
W	2SD602	2C	2SK116

Example

WQ ⟶ 2SD602 – Q
YQ ⟶ 2SD601 – Q
1BS ⟶ 2SB814 – S

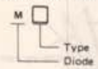
Appearance and Symbols



	1	2	3
Except 2SK199	Drain	Source	Gate
2SK199	Gate	Drain	Source

2. Chip Diode

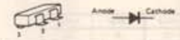
The diode number is indicated on the top surface of the chip diode using Two alphabet letters.



Diode Number

Letter	Diode No.	Letter	Diode No.
MA	MA151A	MI	MA152K
MB	MA152A	MK	MA28W-B
MC	MA153	ML	MA28T-A
MD	MA28-A	MN	MA151WA
ME	MA28-B	MO	MA152WA
MF	MA28W-A	MT	MA151WK
MH	MA151K	MU	MA152WK

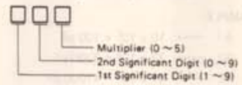
Appearance and Symbols



	1	2	3
MA28/28W/28T	–	Anode	Cathode
MA151K/152K	–	Anode	Cathode
MA151A/152A	–	Cathode	Anode
MA151WK/MA152WK	Anode	Anode	Cathode
MA151WA/MA152WA	Cathode	Cathode	Anode
MA153	Cathode	Anode	Common

3. Chip Resistor

The resistor value is indicated on the bottom surface of the chip resistor using three digit numbers.



EXAMPLE:

330 ⟶ $33 \times 10^0 = 33$ ohms
561 ⟶ $56 \times 10^1 = 560$ ohms
123 ⟶ $12 \times 10^3 = 12$ kohms

Note: Zero ohm resistor (jumper chip) is colored red or green.

4. Chip Capacitor

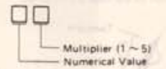
The capacitive value of replacement chip capacitors is indicated on the bottom surface. Original parts do not have value indication.

If the capacitive value is less than 100 pF, the value will be indicated by one or two digit number expressing the capacity directly in pF.

EXAMPLE:

0.5 ⟶ 0.5 pF   2.5 ⟶ 2.5 pF
75 ⟶ 0.75 pF   33 ⟶ 33 pF
1 ⟶ 1 pF   82 ⟶ 82 pF

If the capacitive value is 100 pF or greater, the value will be indicated by an alpha-numeric code. The letter precedes the number and expresses a numerical value to be multiplied by the number which follows.



Numerical Value

Letter	Value	Letter	Value
A	10	N	33
B	11	P	36
C	12	Q	39
D	13	R	43
E	15	S	47
F	16	T	51
G	18	U	56
H	20	V	62
J	22	W	68
K	24	X	75
L	27	Y	82
M	30	Z	91

Letters I and O are not used

EXAMPLE:

A1 ⟶ $10 \times 10^1 = 100$ pF

N2 ⟶ $33 \times 10^2 = 3300$ pF

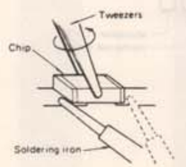
S3 ⟶ $47 \times 10^3 = 47000$ pF

5. Precautions in replacing the chip component

1. Make sure that the unit is turned OFF when replacing the chip.
2. Use tweezers to prevent any damage to the chip surface.
3. Do not re-use the chips after removal.
4. Do not rub the electrode of chips.
5. Do not subject the chips to excessive stress.
6. It is recommended that a pencil-type soldering iron to be used.
7. The solder whose diameter is less than 0.5 mm is recommended.
8. Do not heat the chip beyond 3 seconds.
9. Maintain temperature control under 260°C (500°F) when soldering.

5-1 Removal (Transistor, Diode, Resistor and Capacitor)

1. Add the solder to both ends of the chip (three leads for chip transistor).
2. While attaching the soldering iron to both ends of the chip (three leads for chip transistor) as shown below, remove the chip by turning it with tweezers.
   Note: Be careful not to damage other chips.

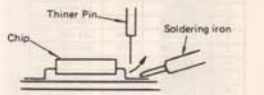


5-2 Removal (IC)

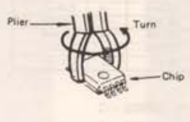
1. Add the solder wick and solder iron to each lead of the IC and remove solder.



2. Add the solder iron to each lead of the IC and left each lead of the IC using thiner pin.

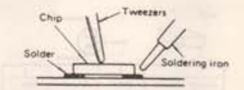


3. Remove IC turning it with plier.

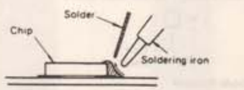


5-3 Mounting

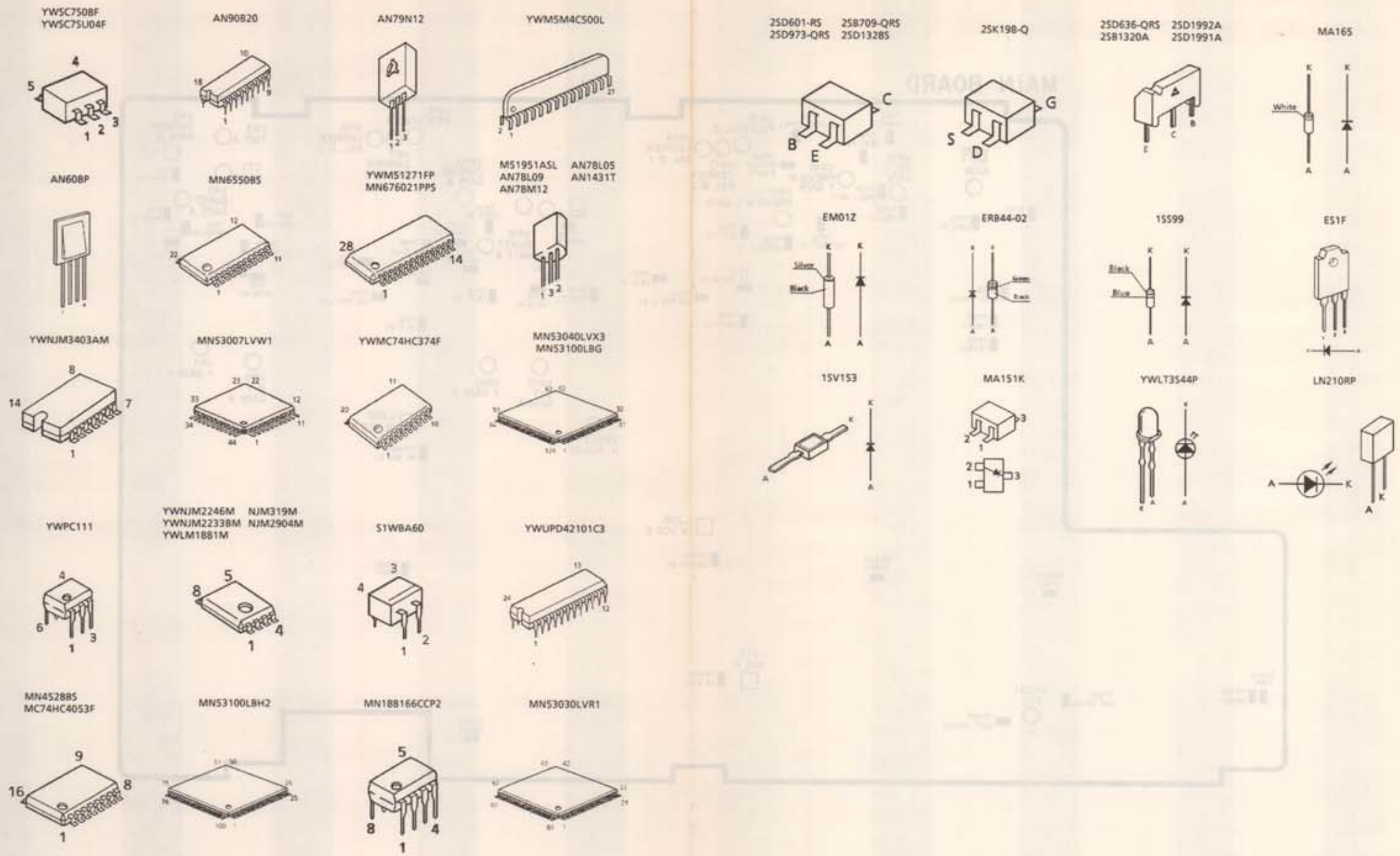
1. Place the solder thinly on the chip mounting foil.
2. Solder the chip temporarily while holding the chip with the tweezers.



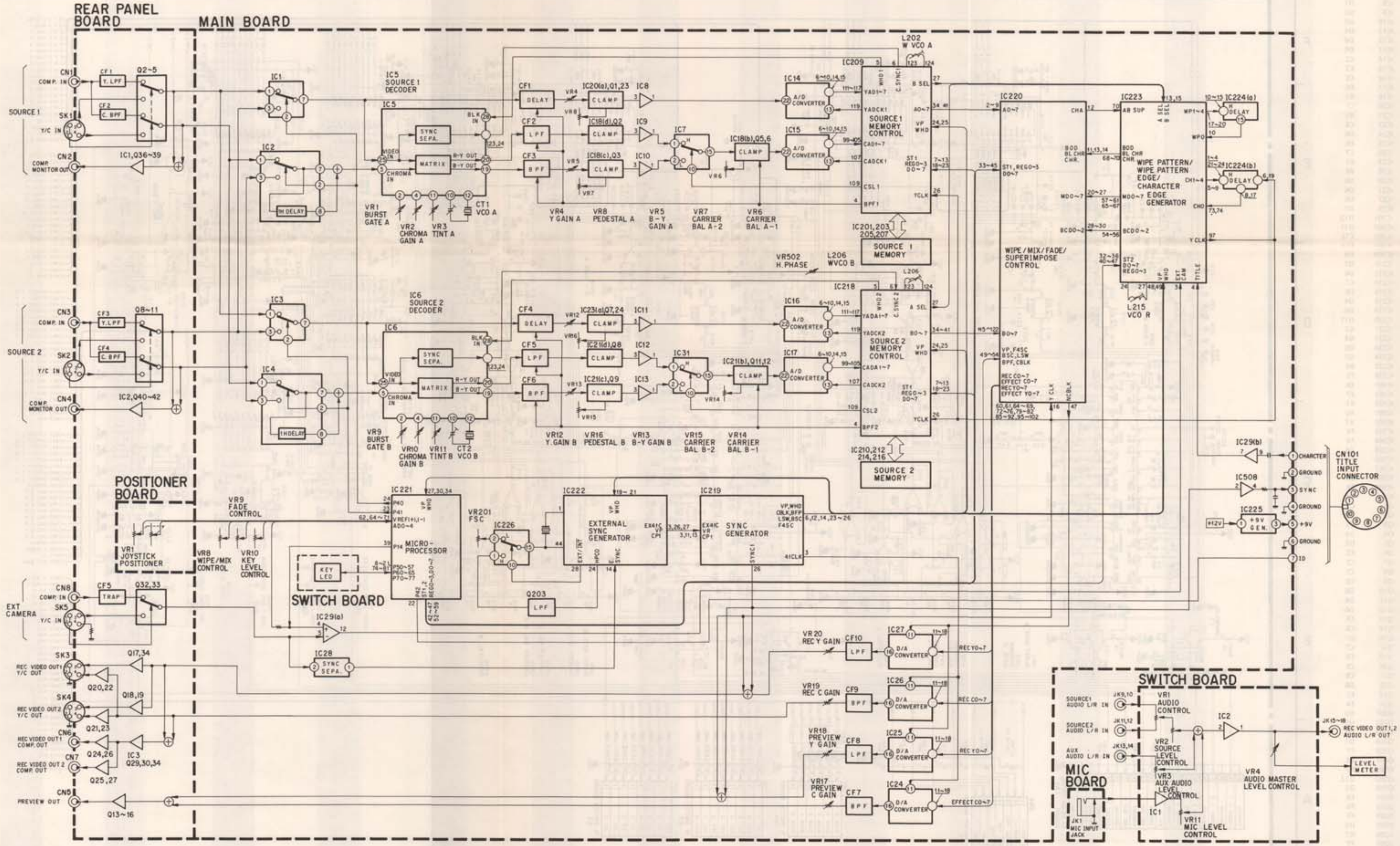
3. Solder both ends of chip (three leads for chip transistor)



APPEARANCE OF IC, TRANSISTOR AND DIODE



OVERALL BLOCK DIAGRAM OF WJ-AVE5

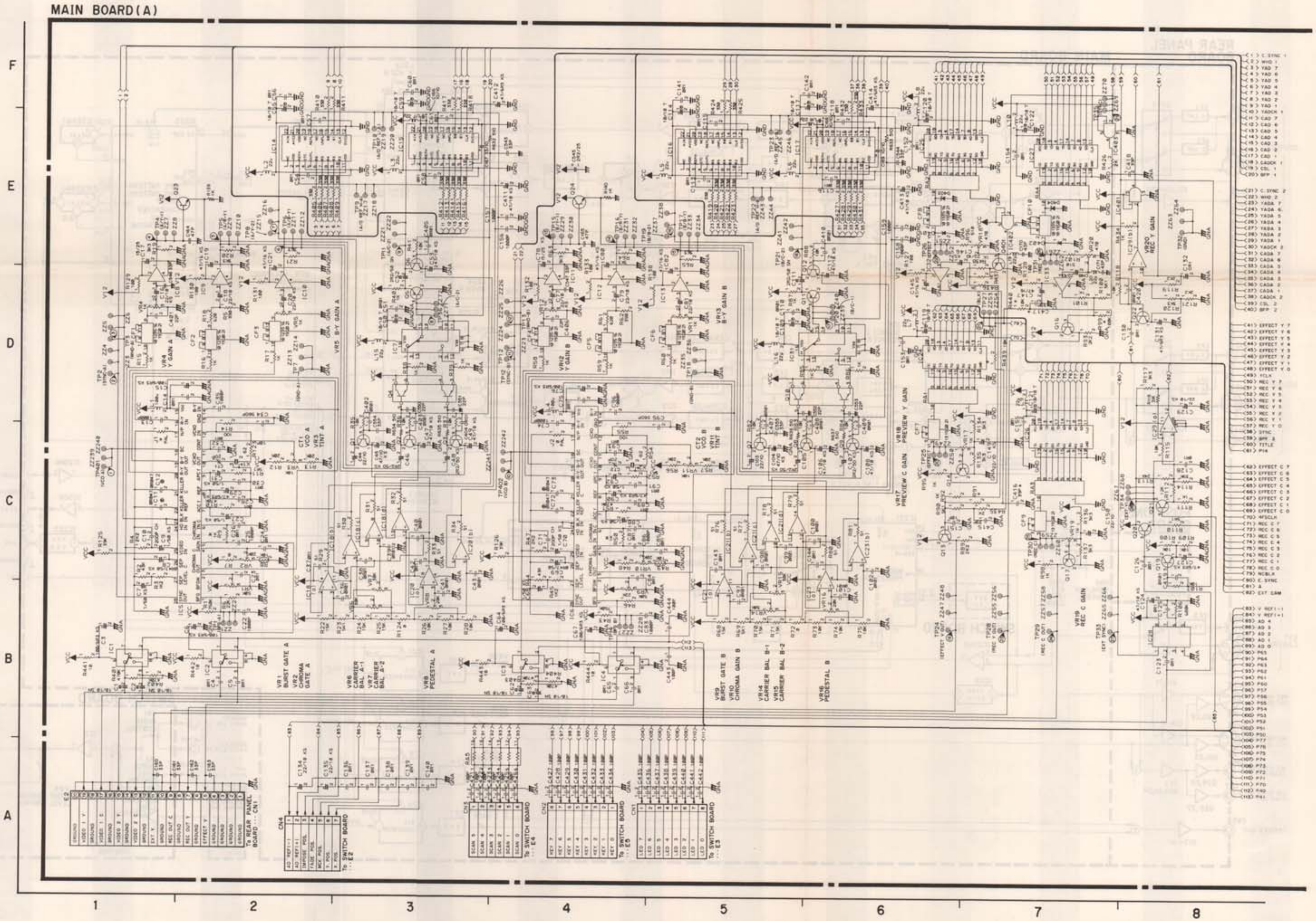


SCHEMATIC DIAGRAM OF MAIN BOARD (ANALOG SIGNAL SECTION)

Main Board

<Index>

IC1	B1
IC2	B2
IC3	B4
IC4	B4
IC5	C2
IC6	C4
IC7	D3
IC8	D1
IC9	D2
IC10	D2
IC11	D4
IC12	D4
IC13	D5
IC14	E2
IC15	E3
IC16	E5
IC17	E6
IC18	B2
IC20	C3
IC21	B5
IC23	C6
IC24	D6
IC25	E6
IC26	C7
IC27	E7
IC28	B8
IC29	D8
IC31	D6
IC32	D6
IC33	D7
IC201	D12
IC203	D11
IC205	C12
IC207	C11
IC209	D9
IC210	D7
IC212	D6
IC214	C7
IC216	C6
IC218	D4
IC219	G6
IC220	G11
IC221	G2
IC222	G4
IC223	G8
IC224	G7
IC225	B6
IC226	F5
IC401	E8
IC402	E7
IC403	E7
IC501	H2
IC502	A7
IC503	F4
IC504	F4
IC505	G6
IC506	E3
IC507	D3
IC508	B6
IC509	E8
IC510	D8
Q1	C3
Q2	C3
Q3	C3
Q4	D3
Q5	D3
Q6	E3
Q7	C5
Q8	C5
Q9	C6
Q10	D6
Q11	D6
Q12	D6
Q13	C6
Q14	C6
Q16	D7
Q17	C7
Q19	C8
Q20	C8
Q21	C8
Q22	D8
Q23	E2
Q24	E4
Q201	D3
Q202	H5
Q203	G5
Q204	D7
Q205	F7
Q401	E3
Q501	H7
Q502	D12
Q503	D3
D201	E6
D202	F6
D203	F3
D205	H3
D206	G7
D207	F7
D208	E8
D401	E6
D402	E7
D403	E6
D404	E7



	IC1	IC2	IC3	IC4	IC5	IC6	IC7	IC8	IC9	IC10	IC11	IC12	IC13	IC14	IC15	IC16	IC17	IC18	IC20
Pin 1	2.1	2.8	2.1	2.9	2.6	2.7	1.8	6.5	6.3	6.5	6.4	6.3	6.5	0	0	0	0	3.8	1.5
2	4.2	0	0	4.2	2.0	2.1	1.8	11.2	11.2	11.2	11.1	11.2	11.2	4.8	4.9	4.9	4.9	3.5	1.5
3	2.1	2.9	2.1	2.8	2.0	2.1	0.3	2.5	2.5	2.5	2.5	2.5	2.5	3.4	3.5	3.4	3.4	3.5	0
4	0	0	0	0	2.4	2.4	0.3	0	0	0	0	0	0	0	0	0	0	4.9	0
5	2.1	0	2.1	0	2.8	2.8	0.3							0	0	0	0	2.4	1.5
6	4.8	4.8	4.8	4.8	2.8	2.8	0							0.9	0.9	0.9	1.5	2.4	0
7	1.6	2.1	1.6	2.1	4.0	4.0	0							1.7	0.3	1.7	0.7	2.4	1.1
8	0	0	0	0	2.8	2.9	0							1.5	0	1.6	0.3	2.4	4.9
9					2.8	2.8	0							1.6	-0.6	1.6	-0.3	2.4	
10					2.7	2.7	2.4							0.9	-0.4	0.6	-0.2	2.4	
11					2.3	2.3	0							4.9	4.9	4.9	4.9	0	
12					3.2	3.1	0.3							0	0	0	0	2.4	
13					0	0	0.3							2.7	2.4	2.7	2.4	2.4	
14					2.8	2.8	0.3							-0.2	0	0.5	0	2.4	
15					4.8	4.8	1.8							-0.8	0.3	-1.5	0.2		
16					2.8	2.7	4.9							0.3	0	0.3	0		
17					0	0								0	0	0	0		
18					3.9	3.9								1.4	1.4	1.4	1.4		
19					2.0	1.9								0	0	0	0		
20					1.9	1.9								4.9	4.9	4.9	4.9		
21					2.2	2.2								0	0	0	0		
22					2.6	2.6								2.0	2.4	2.0	2.4		
23					4.3	4.3													
24					4.3	4.3													
25					2.7	2.7													
26					2.7	2.8													
27					2.5	2.5													
28					3.9	3.9													

	IC21	IC23	IC28	IC29	IC31	IC32	IC33	IC201	IC203	IC205	IC207	IC210	IC212	IC214	IC216	IC219	IC224	IC226
Pin 1	3.8	1.5	0	0	1.8	6.5	6.5	0	0	0	0	0	0	0	0	5.0	0	0.4
2	3.4	1.5	1.5	0	1.8	11.3	11.3	0	0	1.9	1.9	0	0	1.8	1.8	0	0	2.3
3	3.3	1.5	0	0	0.2	2.5	2.5	1.9	1.9	1.0	1.0	2.1	2.1	1.0	1.0	1.5	0	0.3
4	0	0	0	1.7	0.2	0	0	1.9	1.9	1.0	1.0	1.6	1.6	1.0	1.0	0	0	0.4
5	0	1.4	4.9	1.9	0.2			0	0	1.5	1.5	0	0	1.5	1.5	5.0	0	0.4
6	0	1.4	1.2	0	0			-0.2	-0.2	0.7	0.7	-0.4	-0.4	0.7	0.7	2.3	5.0	0
7	2.4	1.1	0	0.3	0			-0.2	-0.2	-1.8	-1.8	-0.2	-0.2	-2.0	-2.0	2.3	0	0
8	2.4	4.9	4.9	0	0			0.6	0.6	-0.9	-0.9	0.6	0.6	-1.0	-1.0	0.1	2.6	0
9	2.4			0	0			1.4	1.4	-1.7	-1.7	1.4	1.4	-0.9	-0.9	0	3.9	0
10	2.4			3.4	2.4			1.4	1.4	-2.0	-2.0	1.3	1.3	-2.4	-2.4	0	3.9	0
11	0			11.9	0			1.9	1.9	1.8	1.8	1.8	1.8	1.6	1.6	0	3.9	0
12	2.4			0	0.3			1.9	1.9	1.9	1.9	2.0	2.0	1.7	1.7	2.5	3.9	0.4
13	0			0	0.3			1.8	1.8	2.4	2.4	1.7	1.7	2.4	2.4	5.0	3.8	0.4
14	2.4			0	0.3			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.5	3.9	0.4
15					1.8			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	5.0	3.9	2.3
16					4.9			0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0	5.0	5.0
17								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	5.0	2.5	
18								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	4.2	5.0	
19								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	5.0	
20								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	3.3	0	
21								0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0	
22								4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	0.1	0	
23								4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7	1.2	0	
24								0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0	
25								1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0		
26								0	0	0	0	0	0	0	0	4.6		
27								4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	0		
28								4.9	4.9	4.8	4.8	4.8	4.8	4.9	4.9	5.0		

			IC209				
Pin 1	3.9	41	0	81	0	121	0
2	0	42	1.7	82	0	122	0
3	2.6	43	1.3	83	0	123	5.0
4	0.2	44	1.2	84	0	124	0
5	4.3	45	0.6	85	0		
6	4.6	46	0	86	0		
7	0	47	5.0	87	-6.5		
8	4.8	48	5.0	88	0		
9	4.8	49	0.8	89	-3.8		
10	4.7	50	1.6	90	-4.5		
11	4.8	51	1.5	91	0.9		
12	4.7	52	0	92	0		
13	4.7	53	1.6	93	0		
14	0	54	1.4	94	1.2		
15	5.0	55	2.0	95	-0.3		
16	0	56	0	96	-2.3		
17	0	57	0	97	-4.0		
18	4.7	58	5.0	98	0		
19	4.7	59	5.0	99	3.0		
20	4.7	60	5.0	100	1.9		
21	4.7	61	0	101	0		
22	4.8	62	-3.2	102	2.0		
23	4.7	63	-7.1	103	1.8		
24	0	64	0	104	1.6		
25	0.8	65	-6.8	105	2.0		
26	0	66	-5.2	106	0		
27	2.5	67	0	107	-14.2		
28	-1.4	68	0	108	5.0		
29	-14.8	69	5.0	109	-6.9		
30	0	70	-14.5	110	0		
31	5.0	71	0	111	1.0		
32	5.0	72	0	112	1.8		
33	0	73	4.6	113	1.7		
34	-2.0	74	4.6	114	2.0		
35	-1.3	75	0	115	1.9		
36	-1.6	76	0	116	1.7		
37	0	77	0	117	2.1		
38	-2.8	78	0	118	0		
39	-2.8	79	5.0	119	-2.0		
40	-3.6	80	0	120	4.9		

	IC222		
Pin 1	2.5	41	4.9
2	0	42	0
3	1.7	43	2.4
4	0	44	2.4
5	0		
6	-9.5		
7	0		
8	1.9		
9	4.9		
10	2.9		
11	0		
12	0		
13	0		
14	0		
15	5.0		
16	5.0		
17	5.0		
18	0		
19	0		
20	0.8		
21	0.8		
22	0.8		
23	5.0		
24	0.1		
25	0		
26	5.0		
27	0		
28	0		
29	0		
30	0		
31	5.0		
32	0		
33	4.9		
34	0		
35	0		
36	0		
37	0		
38	0		
39	0		
40	0		

			IC218				
Pin 1	4.3	41	0	81	0	121	0
2	0	42	1.7	82	0	122	0
3	2.5	43	1.2	83	0	123	5.0
4	0.2	44	1.2	84	0	124	2.7
5	4.3	45	0.6	85	0		
6	4.6	46	0	86	0		
7	0	47	5.0	87	-7.0		
8	4.8	48	5.0	88	0		
9	4.8	49	0.8	89	0		
10	4.7	50	1.5	90	-4.6		
11	4.7	51	1.5	91	0.9		
12	4.7	52	1.6	92	0		
13	4.7	53	1.3	93	1.5		
14	5.0	54	1.3	94	0		
15	5.0	55	1.7	95	-0.1		
16	0	56	0	96	-1.9		
17	0	57	0	97	-4.1		
18	4.7	58	4.9	98	0		
19	4.7	59	5.0	99	3.2		
20	4.7	60	5.0	100	1.7		
21	4.7	61	5.0	101	1.5		
22	4.7	62	-5.9	102	1.6		
23	4.7	63	-7.5	103	1.5		
24	0	64	-5.3	104	1.5		
25	0.8	65	-8.3	105	2.0		
26	4.9	66	-6.9	106	0		
27	2.5	67	-6.8	107	-12.6		
28	-2.1	68	0	108	5.0		
29	-15.0	69	5.0	109	-5.0		
30	0	70	-13.3	110	0		
31	5.0	71	-9.9	111	0.9		
32	5.0	72	0	112	1.8		
33	0	73	4.6	113	1.8		
34	-3.8	74	4.6	114	1.9		
35	-2.7	75	0	115	1.6		
36	-3.1	76	0	116	1.6		
37	-4.2	77	0	117	1.8		
38	-4.4	78	0	118	0		
39	-4.7	79	5.0	119	-2.6		
40	-6.1	80	0	120	4.9		

			IC220				
Pin 1	0	41	4.7	81	1.8	121	1.8
2	0	42	4.8	82	0.9	122	2.2
3	1.9	43	4.7	83	0	123	0
4	1.6	44	4.7	84	5.0	124	5.0
5	1.8	45	0	85	0		
6	1.9	46	0	86	1.6		
7	1.7	47	3.7	87	1.3		
8	0	48	5.0	88	1.2		
9	2.2	49	0	89	1.2		
10	0	50	2.4	90	1.2		
11	0	51	0	91	1.3		
12	0	52	2.5	92	3.0		
13	0	53	0.2	93	5.0		
14	0	54	1.2	94	0		
15	0	55	0	95	0		
16	2.6	56	0	96	1.6		
17	0	57	0	97	0		
18	0	58	0	98	1.6		
19	0	59	0	99	0		
20	5.0	60	0	100	1.8		
21	0	61	1.7	101	1.8		
22	5.0	62	5.0	102	1.0		
23	5.0	63	0	103	0		
24	0	64	1.3	104	5.0		
25	5.0	65	1.2	105	0		
26	0	66	1.1	106	0		
27	5.0	67	1.2	107	0.2		
28	0	68	0	108	5.0		
29	2.2	69	3.0	109	0.2		
30	0	70	0	110	0		
31	5.0	71	5.0	111	0.2		
32	0	72	0	112	0.2		
33	4.7	73	1.6	113	0.2		
34	4.8	74	1.6	114	0.2		
35	4.8	75	1.6	115	0		
36	4.8	76	1.9	116	1.8		
37	4.8	77	0	117	1.6		
38	4.7	78	0	118	1.6		
39	4.7	79	0	119	0		
40	4.7	80	1.8	120	0		

			IC221		
Pin 1	0.8	41	0	81	0.8
2	.0.8	42	0	82	0
3	0.8	43	0	83	0
4	0.8	44	4.8	84	0
5	0.8	45	4.8		
6	0.8	46	4.8		
7	0	47	4.8		
8	0	48	0		
9	0	49	0		
10	0	50	5.0		
11	0	51	0		
12	0	52	0		
13	0	53	4.8		
14	0	54	4.8		
15	0	55	4.8		
16	4.9	56	4.8		
17	0	57	4.8		
18	0	58	4.8		
19	0	59	0		
20	0	60	0		
21	5.0	61	1.2		
22	5.0	62	1.2		
23	0	63	1.7		
24	4.9	64	1.7		
25	0	65	1.2		
26	0	66	1.7		
27	0	67	1.2		
28	0	68	2.5		
29	0	69	2.3		
30	0.8	70	2.6		
31	2.3	71	3.8		
32	2.1	72	5.0		
33	0	73	5.0		
34	0.8	74	0		
35	4.2	75	0.8		
36	0	76	0		
37	0	77	0		
38	0	78	0.8		
39	1.1	79	0		
40	0	80	1.6		

			IC223		
Pin 1	0	41	4.7	81	0
2	0	42	4.7	82	0
3	0.2	43	4.7	83	0
4	0	44	4.7	84	0
5	0	45	4.7	85	0
6	0	46	4.7	86	0
7	0	47	4.7	87	5.0
8	0	48	0	88	5.0
9	0	49	0.8	89	0
10	5.0	50	5.0	90	0
11	0	51	0	91	0
12	5.0	52	0.6	92	0
13	1.5	53	1.0	93	0
14	0	54	2.2	94	0
15	1.5	55	2.2	95	0
16	5.0	56	2.1	96	0
17	3.9	57	5.0	97	4.9
18	3.9	58	5.0	98	1.0
19	3.9	59	5.0	99	0
20	3.9	60	5.0	100	5.0
21	0	61	5.0		
22	0	62	0		
23	2.7	63	5.0		
24	2.5	64	5.0		
25	5.0	65	5.0		
26	0	66	5.0		
27	4.6	67	5.0		
28	0	68	0		
29	0	69	0		
30	0	70	0		
31	0	71	0		
32	4.8	72	0		
33	4.8	73	0		
34	4.8	74	0		
35	4.8	75	5.0		
36	4.8	76	0		
37	0	77	0		
38	0	78	0		
39	5.0	79	0		
40	4.7	80	0		

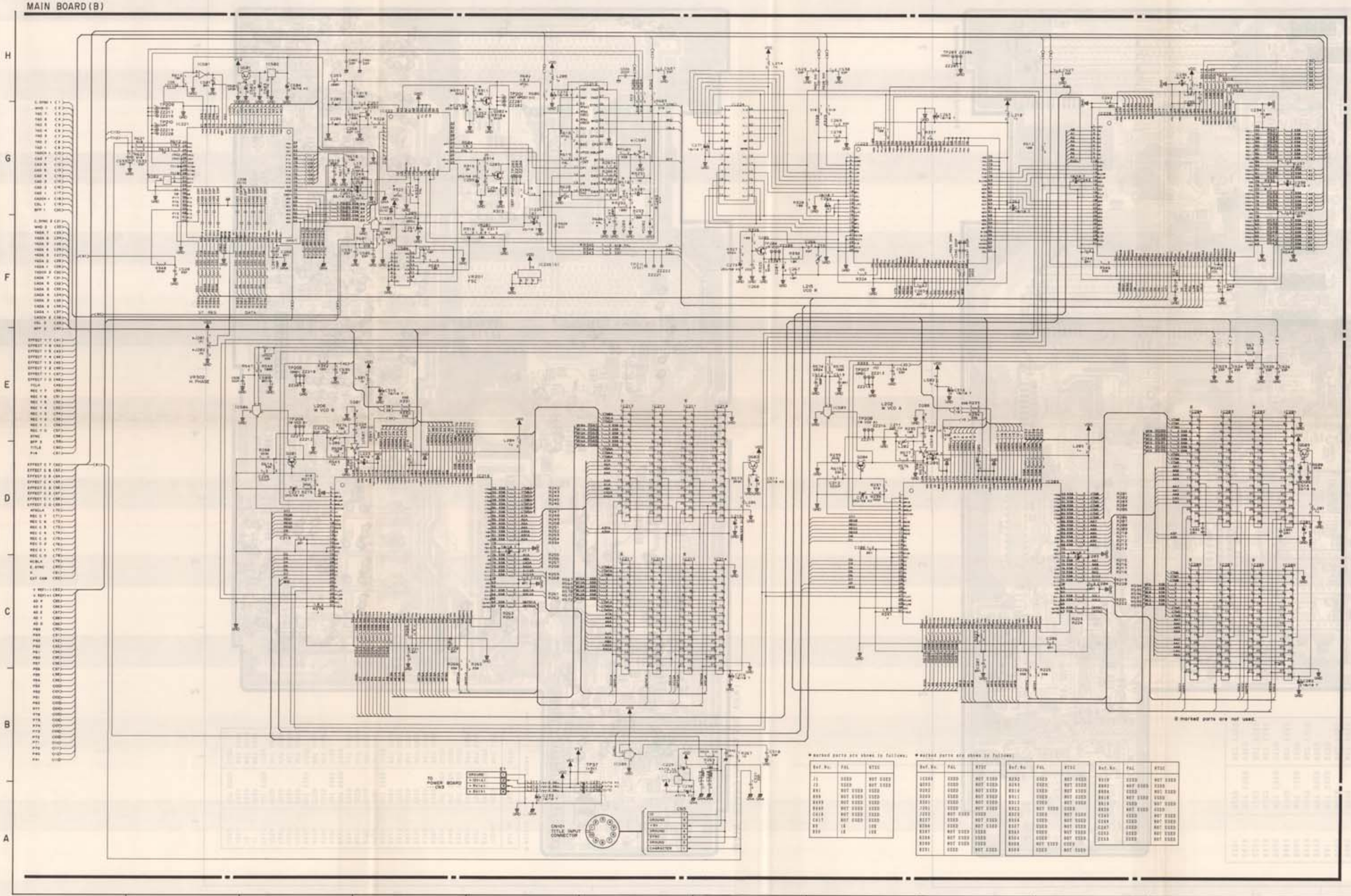
	IC401	IC402	IC403	IC501	IC502	IC503	IC504	IC505	IC506	IC507	IC508	IC509	IC510
Pin 1	4.9	4.9	4.9	5.0	0	0	0	0	3.9	0	4.9	3.9	0
2	0.3	4.6	4.6	0	0	0	0.3	2.4	3.9	0	4.5	3.9	2.5
3	0	0	0	4.9	11.9	0	0	0	0	0	0	0	0
4	0	4.6	4.6			0	0	2.6	4.6	2.5	4.6	4.6	2.5
5	4.9	4.9	4.9			5.0	0	5.0	5.0	5.0	5.0	5.0	4.9
6							0						
7							5.0						
8							0						
9							5.0						
10							0						
11							0						
12							0.8						
13							5.0						
14							0						
15							0						
16							5.0						

	B	C	E
Q1	-0.4	2.0	1.5
2	0.1	2.4	2.5
3	0.1	2.4	2.4
5	1.8	0	0
6	0.1	2.4	2.4
7	-0.4	2.0	1.5
8	0.1	2.4	2.4
9	0.1	0	2.4
11	1.8	0	2.4
12	0.1	2.4	2.4
13	6.3	12.0	0
14	2.4	0	3.0
16	6.3	11.9	5.6
17	2.5	0	3.1
19	0	2.4	2.4
20	2.4	4.9	1.9
21	1.2	4.9	0.6
22	-0.2	1.4	0
23	6.5	12.0	5.8
24	6.4	11.9	5.8
201	2.8	2.5	4.9
202	2.5	2.4	5.0
203	0.3	0	5.0
204	2.8	2.5	5.0
205	2.7	2.6	5.0
401	0	0	0.8
501	11.1	11.8	11.9
502	4.2	4.8	4.9
503	4.2	4.8	5.0

	1	2	3	4	5	6
Q4	4.9	0	0	4.9	2.4	1.8
Q10	4.9	2.4	1.8	4.9	2.4	1.8

SCHEMTIC DIAGRAM OF MAIN BOARD (DIGITAL SIGNAL SECTION)

MAIN BOARD (B)



⊗ marked parts are not used.

* marked parts are shown in follows;

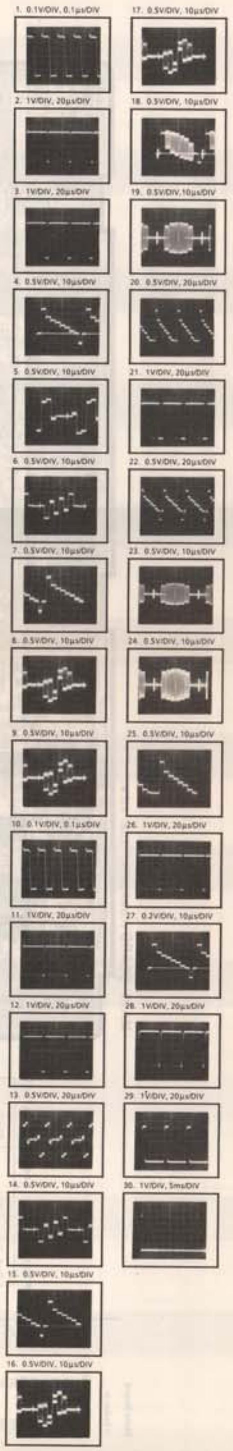
Ref. No.	PAL	NTSC
J1	USED	NOT USED
J2	USED	NOT USED
[illegible]	NOT USED	USED
[illegible]	NOT USED	USED
[illegible]	NOT USED	USED
[illegible]	NOT USED	USED
[illegible]	NOT USED	USED
[illegible]	NOT USED	USED
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

* marked parts are shown in follows;

Ref. No.	PAL	NTSC
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	NOT USED	USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	NOT USED	USED
[illegible]	NOT USED	USED
[illegible]	NOT USED	USED
[illegible]	USED	NOT USED

Ref. No.	PAL	NTSC
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	NOT USED	USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	NOT USED	USED
[illegible]	USED	NOT USED

Ref. No.	PAL	NTSC
[illegible]	USED	NOT USED
[illegible]	NOT USED	USED
[illegible]	USED	NOT USED
[illegible]	NOT USED	USED
[illegible]	USED	NOT USED
[illegible]	NOT USED	USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED
[illegible]	USED	NOT USED



CONDUCTOR VIEW OF MAIN BOARD

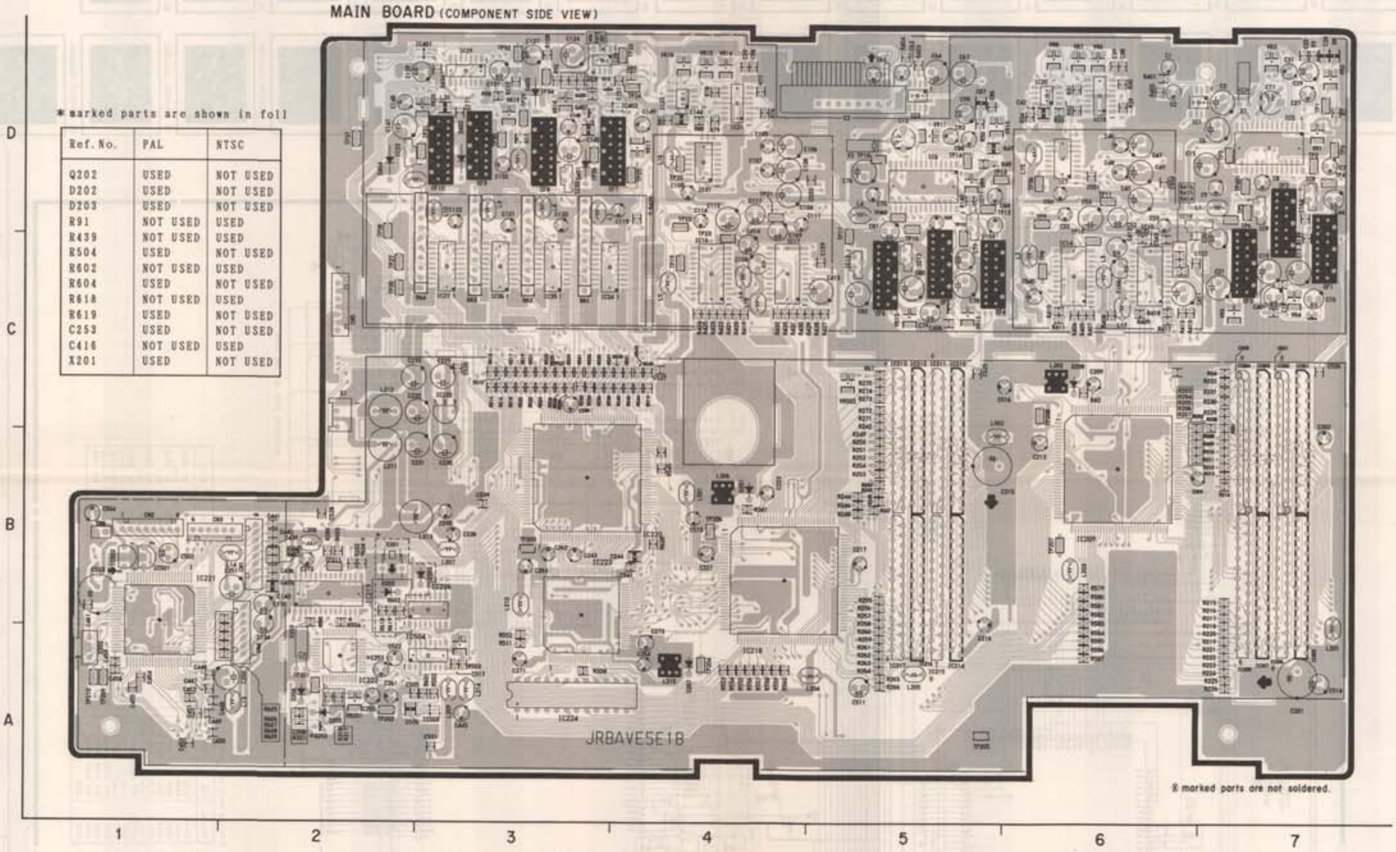
Main Board

<Index>

Component Side

IC1	D7
IC3	D5
IC5	D7
IC6	D5
IC7	D6
IC8	D7
IC9	D7
IC10	D6
IC11	D5
IC12	C5
IC13	C5
IC14	C6
IC15	C6
IC16	C4
IC17	C4
IC18	D6
IC20	D6
IC21	D4
IC23	D4
IC24	C3
IC25	C3
IC26	C3
IC27	C3
IC28	D3
IC29	D3
IC31	D4
IC32	D3
IC33	D2
IC201	B7
IC203	B7
IC205	B7
IC207	B7
IC209	B6
IC210	B5
IC212	B5
IC214	B5
IC216	B5
IC218	B4
IC219	B2
IC220	B3
IC221	B1
IC222	A2
IC223	B3
IC224	A3
IC225	C3
IC226	B3
IC401	D3
IC402	D4
IC501	B1
IC502	B1
IC503	A3
IC504	A3
Q13	D3
Q17	D3
Q202	A2
Q401	D3
D201	B4
D202	B2
D203	B3
D205	A2
D206	A2
D207	A4
D208	C6
D401	D3
D402	D3
D403	D3
D404	D2

MAIN BOARD (COMPONENT SIDE VIEW)



※ marked parts are not soldered.

＊marked parts are shown in foll

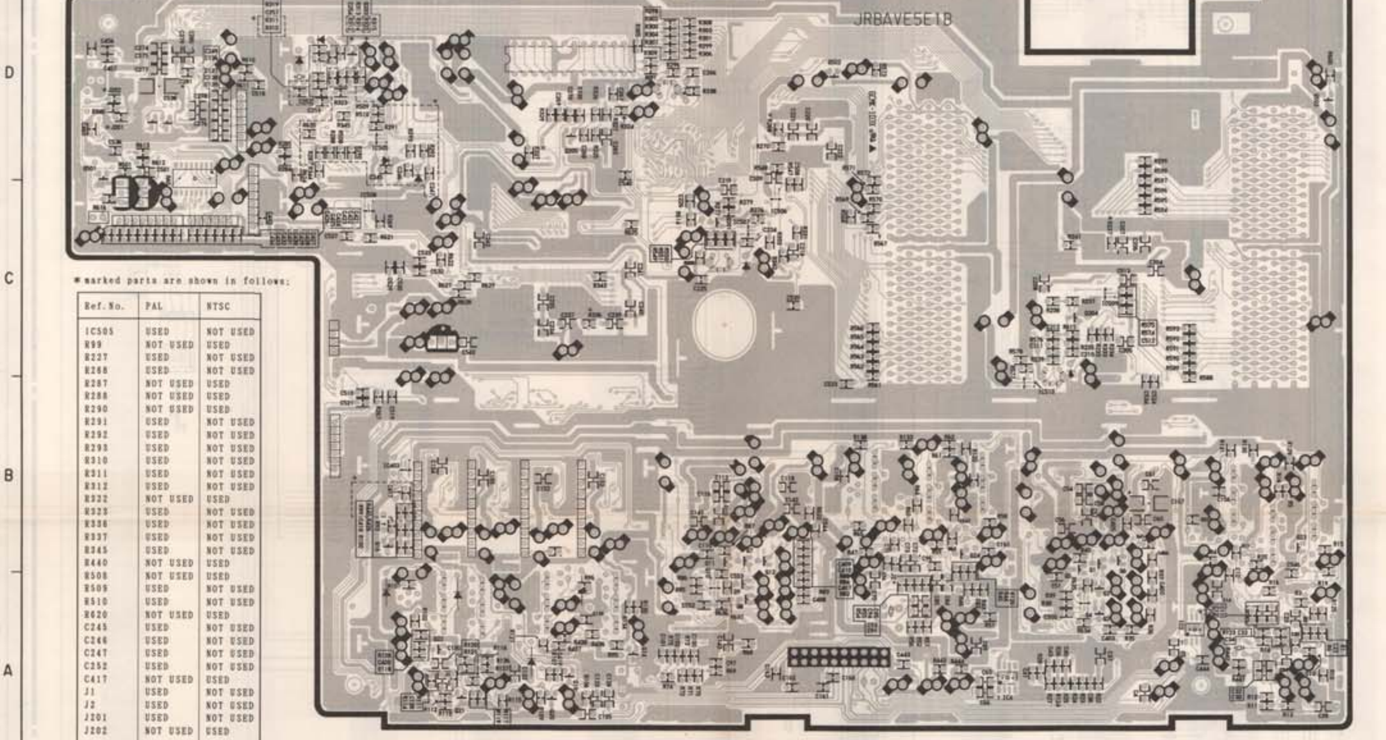
Ref. No.	PAL	NTSC
Q202	USED	NOT USED
D202	USED	NOT USED
D203	USED	NOT USED
R91	NOT USED	USED
R439	NOT USED	USED
R504	USED	NOT USED
R602	NOT USED	USED
R604	USED	NOT USED
R618	NOT USED	USED
R619	USED	NOT USED
C253	USED	NOT USED
C416	NOT USED	USED
X201	USED	NOT USED

<Index>

Pattern Side

IC2	A7
IC4	A6
IC403	B2
IC505	D2
IC506	C4
IC507	C4
IC508	C2
IC509	C6
IC510	B6
Q1	B6
Q2	A6
Q3	A6
Q4	A6
Q5	B6
Q6	B6
Q7	B4
Q8	A4
Q9	A4
Q10	A4
Q11	B4
Q12	B4
Q14	A4
Q16	B2
Q19	A3
Q20	A3
Q21	A3
Q22	A3
Q23	B7
Q24	B5
Q201	C4
Q203	D2
Q204	C6
Q205	D3
Q501	D1
Q502	D5
Q503	D7

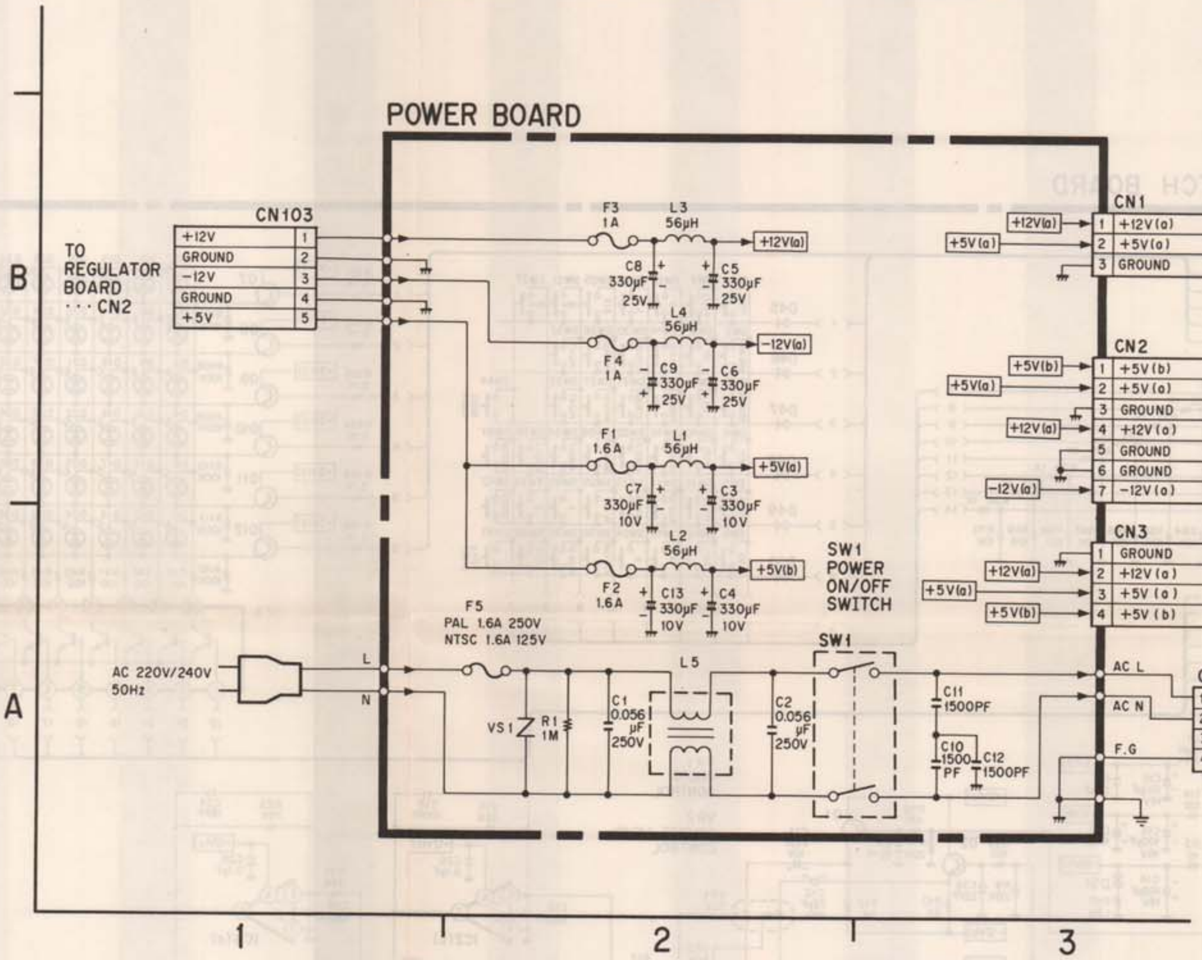
MAIN BOARD (PATTERN SIDE VIEW)



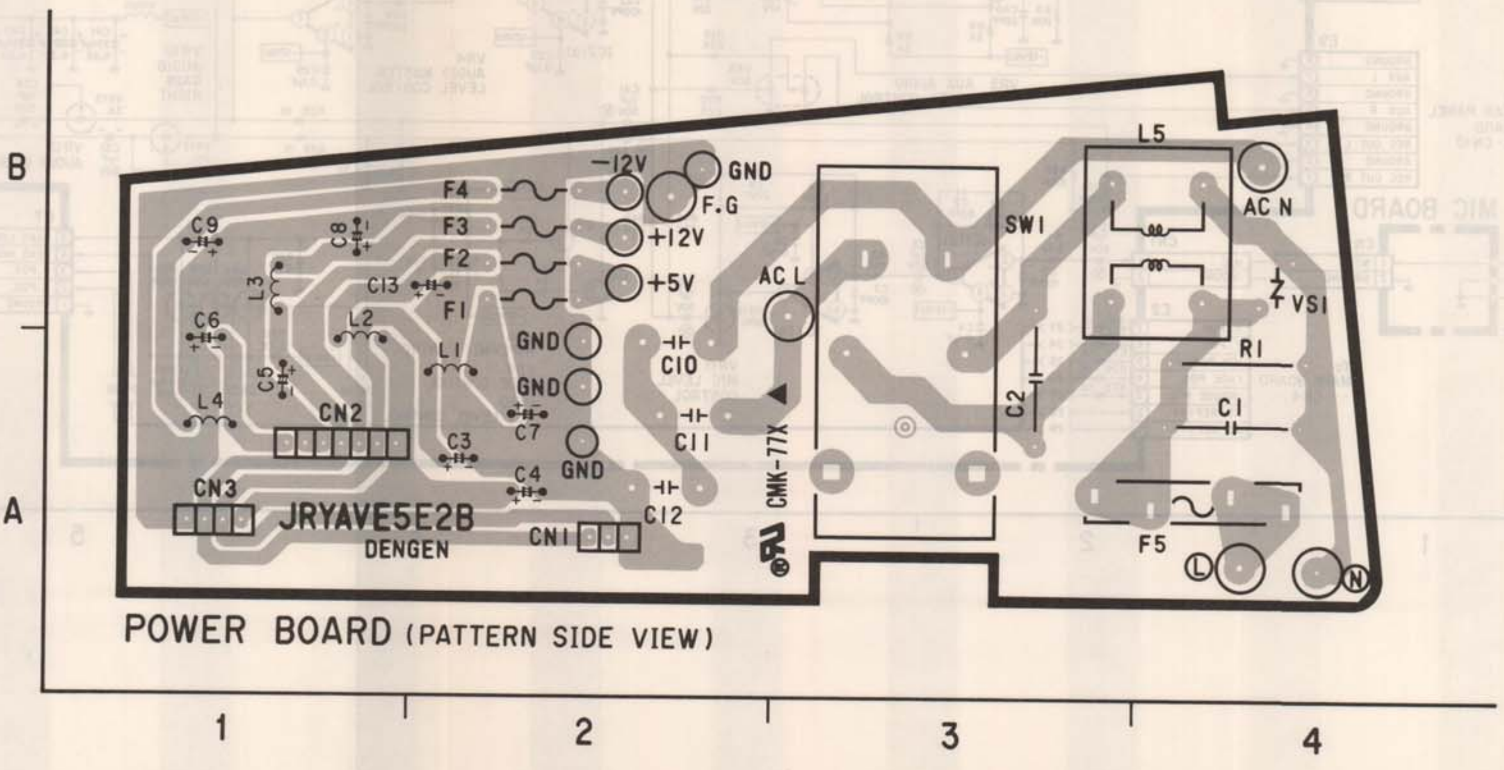
＊marked parts are shown in follows;

Ref. No.	PAL	NTSC
IC505	USED	NOT USED
R99	NOT USED	USED
R227	USED	NOT USED
R268	USED	NOT USED
R287	NOT USED	USED
R288	NOT USED	USED
R290	NOT USED	USED
R291	USED	NOT USED
R292	USED	NOT USED
R293	USED	NOT USED
R310	USED	NOT USED
R311	USED	NOT USED
R312	USED	NOT USED
R322	NOT USED	USED
R323	USED	NOT USED
R336	USED	NOT USED
R337	USED	NOT USED
R345	USED	NOT USED
R440	NOT USED	USED
R508	NOT USED	USED
R509	USED	NOT USED
R510	USED	NOT USED
R620	NOT USED	USED
C245	USED	NOT USED
C246	USED	NOT USED
C247	USED	NOT USED
C252	USED	NOT USED
C417	NOT USED	USED
J1	USED	NOT USED
J2	USED	NOT USED
J201	USED	NOT USED
J202	NOT USED	USED

SCHEMATIC DIAGRAM OF POWER BOARD



CONDUCTOR VIEW OF POWER BOARD



POWER BOARD (PATTERN SIDE VIEW)

SCHEMATIC DIAGRAM OF SWITCH BOARD

Switch Board

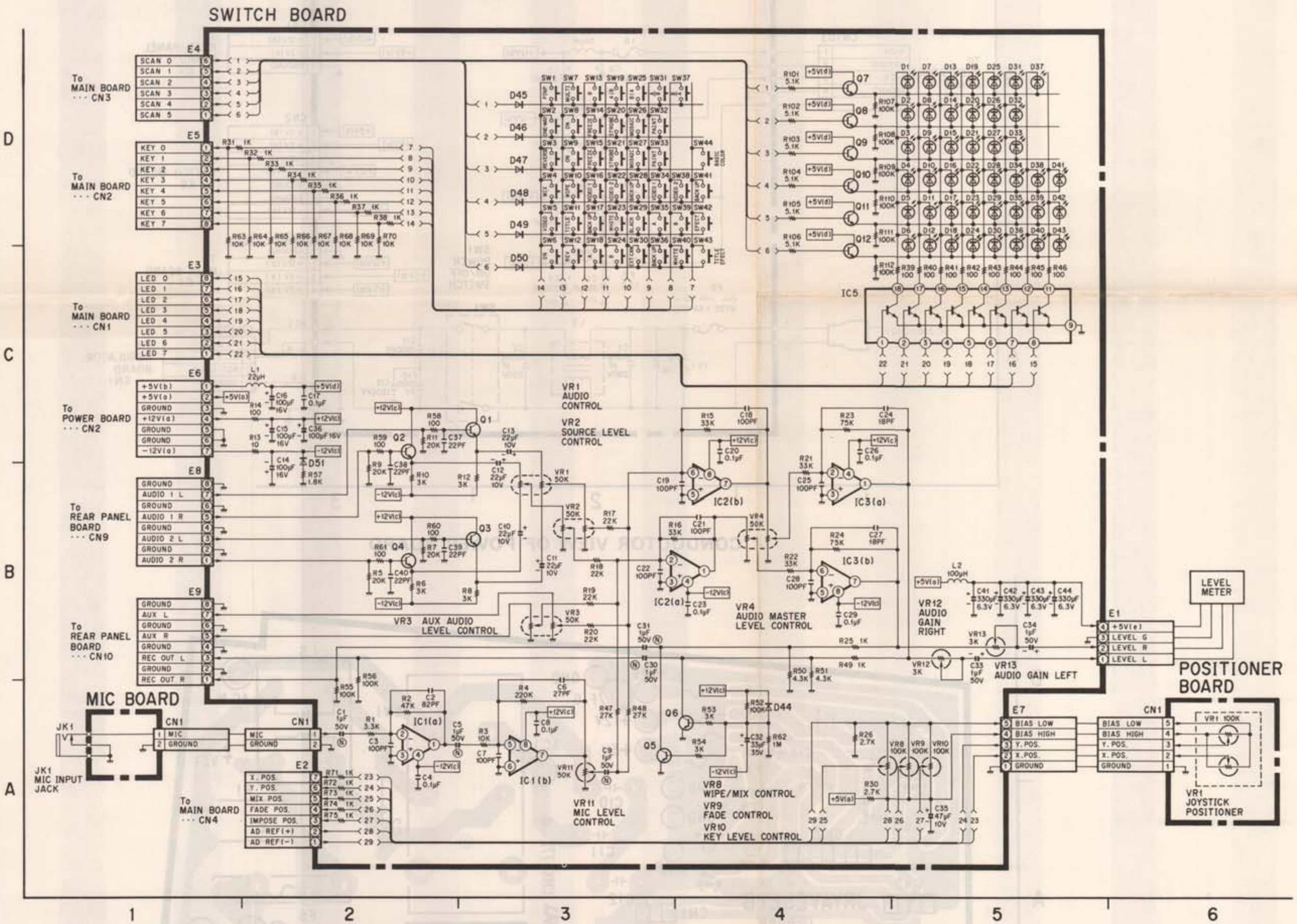
<Index>

IC1	A2
IC2	B4
IC3	B4
IC5	C5
Q1	C3
Q2	C2
Q3	B3
Q4	B2
Q5	A3
Q6	A4
Q7	D4
Q8	D4
Q9	D4
Q10	D4
Q11	D4
Q12	C4
D1	D5
D2	D5
D3	D5
D4	D5
D5	D5
D6	D5
D7	D5
D8	D5
D9	D5
D10	D5
D11	D5
D12	D5
D13	D5
D14	D5
D15	D5
D16	D5
D17	D5
D18	D5
D19	D5
D20	D5
D21	D5
D22	D5
D23	D5
D24	D5
D25	D5
D26	D5
D27	D5
D28	D5
D29	D5
D30	D5
D31	D5
D32	D5
D33	D5
D34	D5
D35	D5
D36	D5
D37	D5
D38	D5
D35	D5
D36	D5
D37	D5
D38	D5
D39	D5
D40	D5
D41	D5
D42	D5
D43	D5
D44	A4
D45	D3
D46	D3
D47	D3
D48	D3
D49	D3
D50	C3
D51	B2

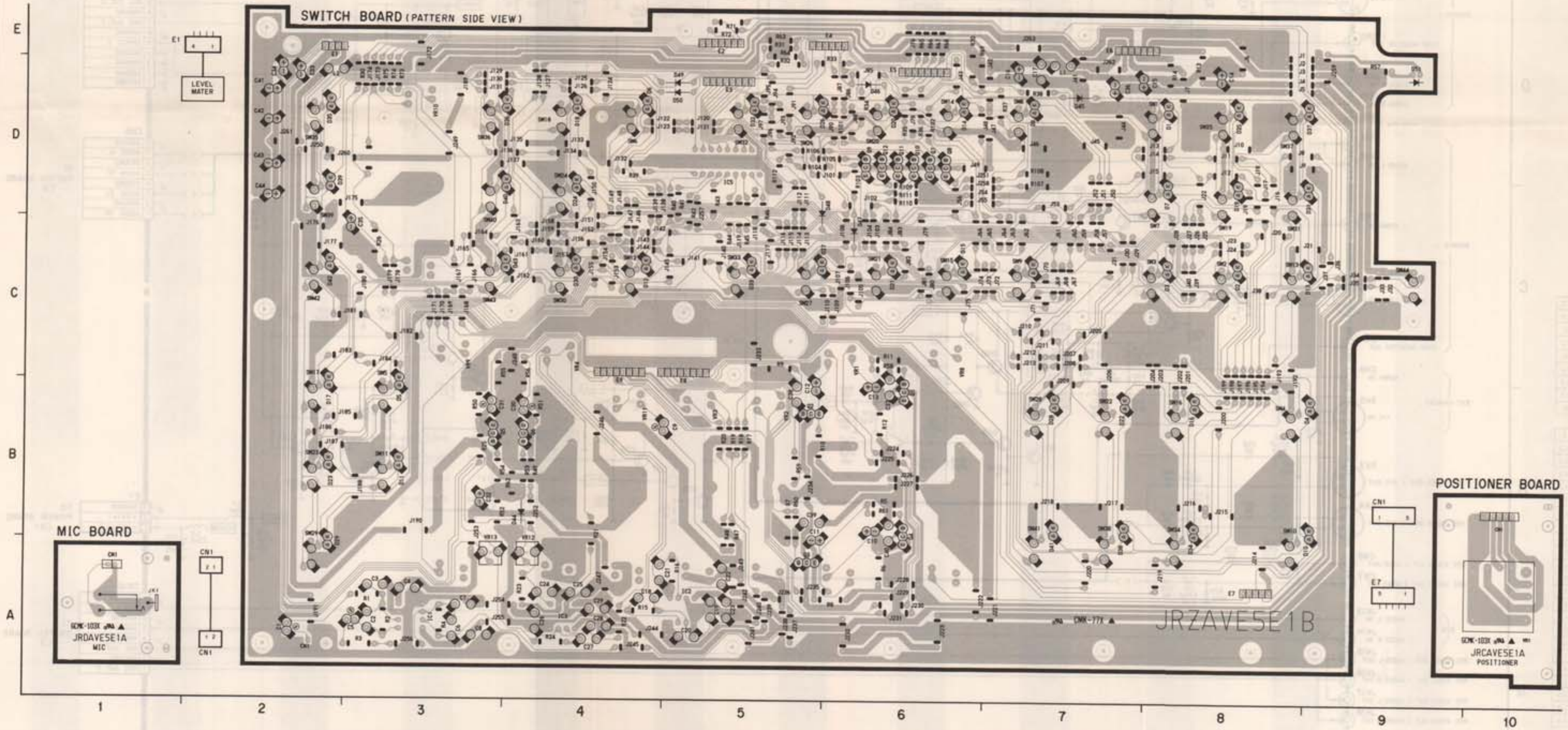
<VOLTAGE>

	IC1	IC2	IC3	IC5
Pin 1	0	0	0	0
2	0	0	0	0.8
3	0	0	0	1.6
4	-11.7	-11.7	-11.7	0
5	0	0	0	0.8
6	0	0	0	0
7	0	0	0	1.6
8	9.1	9.1	9.1	0.8
9				0
10				0
11				1.5
12				1.5
13				2.6
14				2.3
15				2.6
16				1.9
17				2.2
18				2.6

	B	C	E
Q1	-0.8	9.1	-0.2
2	-0.1	9.1	-0.8
3	-0.1	9.1	-0.7
4	-0.8	9.1	-0.1
5	0	0	8.3
6	0	0	8.3
7	0.7	5.0	0.8
8	0.7	5.0	0.8
9	0.7	5.0	0.8
10	0.5	5.0	0.7
11	0.5	5.0	0.7
12	0.6	5.0	0.7



CONDUCTOR VIEW OF SWITCH BOARD



Switch Board

<Index>

IC1	A3
IC2	A5
IC3	A4
IC5	D5
Q1	B6
Q2	B5
Q3	A5
Q4	B6
Q5	B3
Q6	B4
Q7	D6
Q8	D6
Q9	D6
Q10	D6
Q11	D6
Q12	D6
D1	D8
D2	C8
D3	C8
D4	B9
D5	B3
D6	D4
D7	D8
D8	D7
D9	C7
D10	B9
D11	B3
D12	C4
D13	C9
D14	D6
D15	C6
D16	B8
D17	B2
D18	D4
D19	D8
D20	D6
D21	C6
D22	B7
D23	B2
D24	D4
D25	D8
D26	D5
D27	C5
D28	B7
D29	A2
D30	C4
D31	D9
D32	D5
D33	C5
D34	B8
D35	D2
D36	D3
D37	D9
D38	B7
D39	D2
D40	D3
D41	B7
D42	C2
D43	C3
D44	B4
D45	D7
D46	D6
D47	C6
D48	D5
D49	D5
D50	D5
D51	D9

SCHEMATIC DIAGRAM OF REAR PANEL BOARD

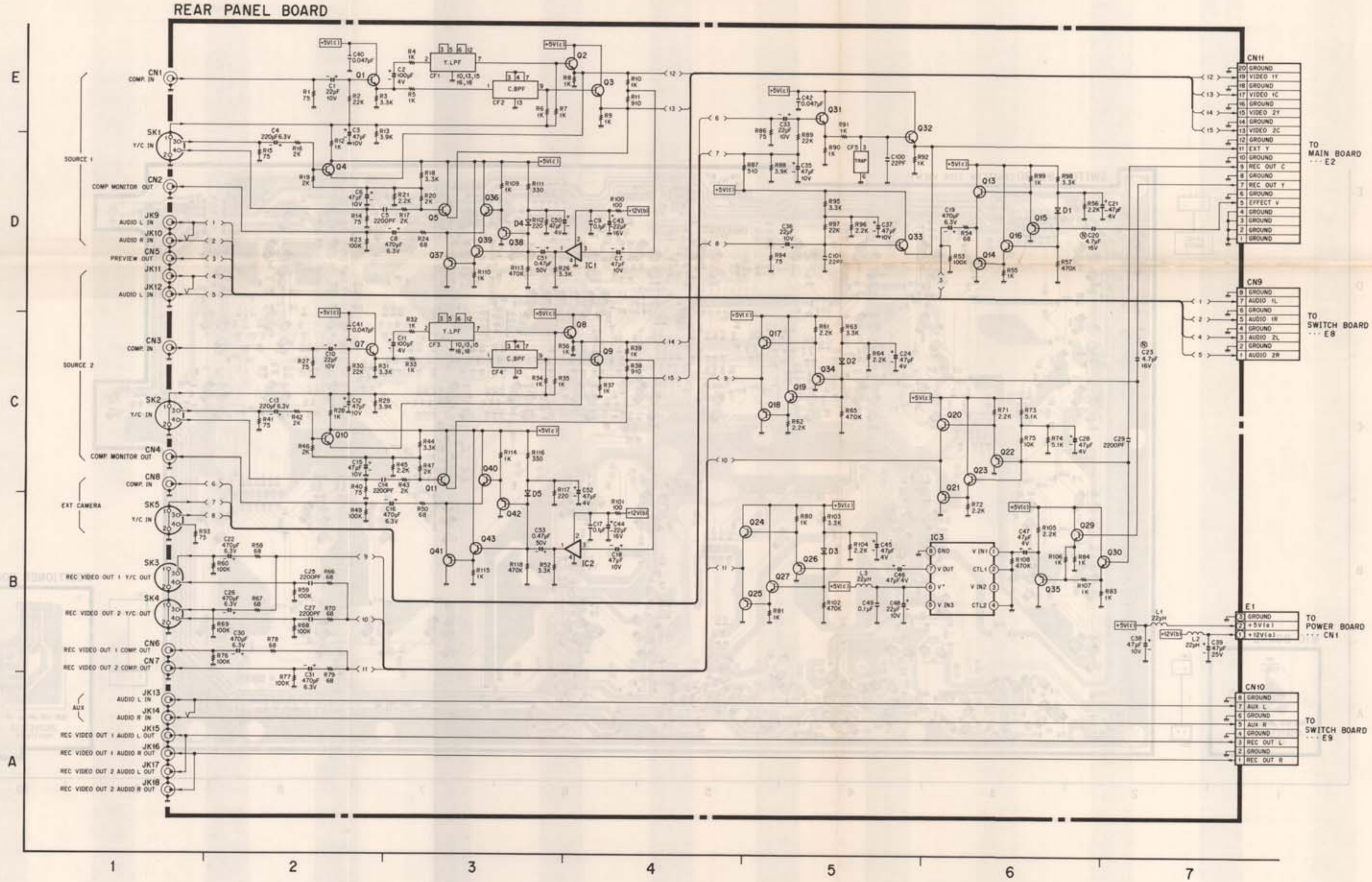
<Index>

IC1	D4
IC2	B4
IC3	B6
Q1	E2
Q2	E4
Q3	E4
Q4	D2
Q5	D3
Q7	C2
Q8	C4
Q9	C4
Q10	C2
Q11	C3
Q13	D6
Q14	D6
Q15	D6
Q16	D6
Q17	C5
Q18	C5
Q19	C5
Q20	C6
Q21	C6
Q22	C6
Q23	C6
Q24	B5
Q25	B5
Q26	B5
Q27	B5
Q29	B6
Q30	B7
Q31	E5
Q32	E5
Q33	D5
Q34	B6
Q35	B6
Q36	D3
Q37	D3
Q38	D3
Q39	D3
Q40	C3
Q41	B3
Q42	B3
Q43	B3
D1	D6
D2	C5
D3	B5
D4	D3
D5	C3

<VOLTAGE>

	IC1	IC2	IC3
Pin 1	6.5	6.3	2.5
2	11.2	11.2	0
3	2.6	2.6	2.2
4	0	0	0
5			2.2
6			4.9
7			2.3
8			0

	B	C	E
Q1	3.8	4.9	3.2
2	3.9	4.9	3.2
3	3.9	4.9	3.2
4	1.9	4.9	3.2
5	1.9	4.9	3.2
7	3.8	4.9	3.2
8	3.9	4.9	3.2
9	3.9	4.9	3.2
10	1.9	4.9	3.2
11	1.9	4.9	3.2
13	3.1	4.9	2.5
14	1.9	0	2.5
15	2.5	0	3.1
16	2.5	4.9	1.9
17	3.1	4.9	2.5
18	1.8	0	2.5
19	2.4	4.9	1.9
20	3.0	4.9	2.4
21	1.8	0	2.4
22	2.4	0	3.0
23	2.4	4.9	1.8
24	3.1	4.9	2.5
25	1.9	0	2.5
26	2.5	0	3.1
27	2.5	4.9	1.9
29	2.5	4.9	1.8
30	2.4	4.9	1.8
31	4.0	4.9	3.3
32	3.3	4.9	2.7
33	2.0	4.9	2.7
34	2.5	0	3.1
35	1.8	0	2.4
36	3.0	4.9	2.4
37	1.8	0	2.5
38	2.4	0	3.0
39	2.4	4.9	1.8
40	3.0	4.9	2.4
41	1.8	0	2.4
42	2.4	0	3.0
43	2.4	4.9	1.8



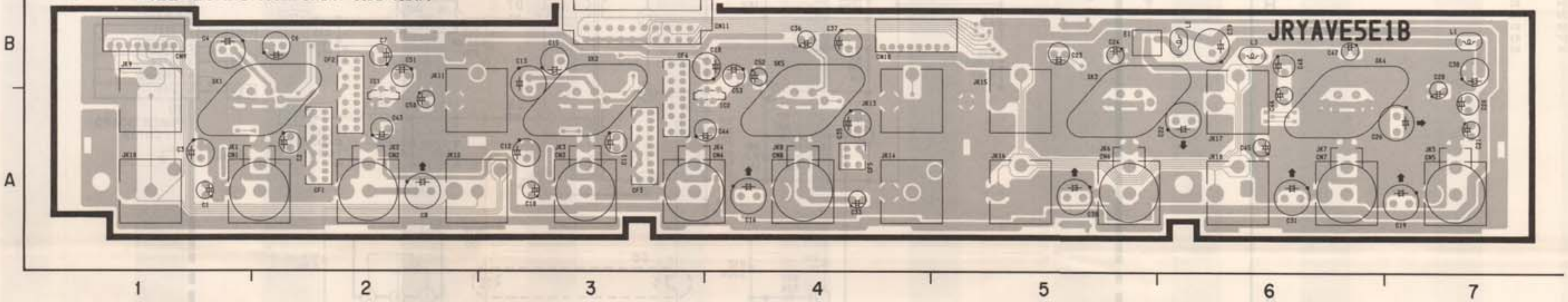
CONDUCTOR VIEW OF REAR PANEL BOARD

<Index>

Component Side

IC1	A2
IC2	A4

REAR PANEL BOARD (COMPONENT SIDE VIEW)

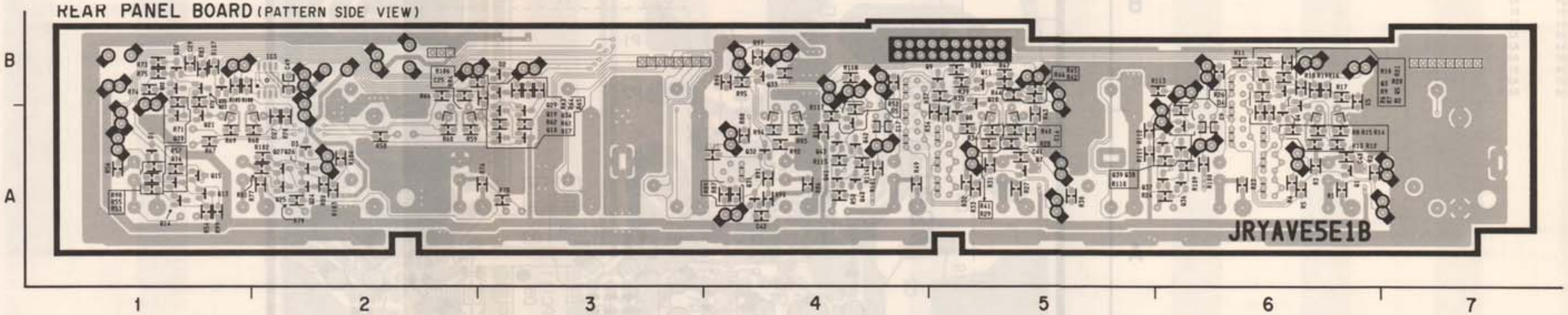


<Index>

PatternSide

IC3	B2
Q1	A6
Q2	A6
Q3	B6
Q4	A6
Q5	B6
Q7	A5
Q8	A5
Q9	B5
Q10	B5
Q11	B5
Q13	A1
Q14	A1
Q15	A1
Q16	A1
Q17	A3
Q18	A3
Q19	A3
Q20	A1
Q21	A1
Q22	B1
Q23	B1
Q24	A2
Q25	A2
Q26	A2
Q27	A2
Q29	B3
Q30	B1
Q31	A4
Q32	A4
Q33	B4
Q34	A3
Q35	B1
Q36	A6
Q37	A6
Q38	A6
Q39	A6
Q40	A4
Q41	A4
Q42	A4
Q43	A4
D1	A1
D2	B3
D3	A2
D4	A6
D5	A4

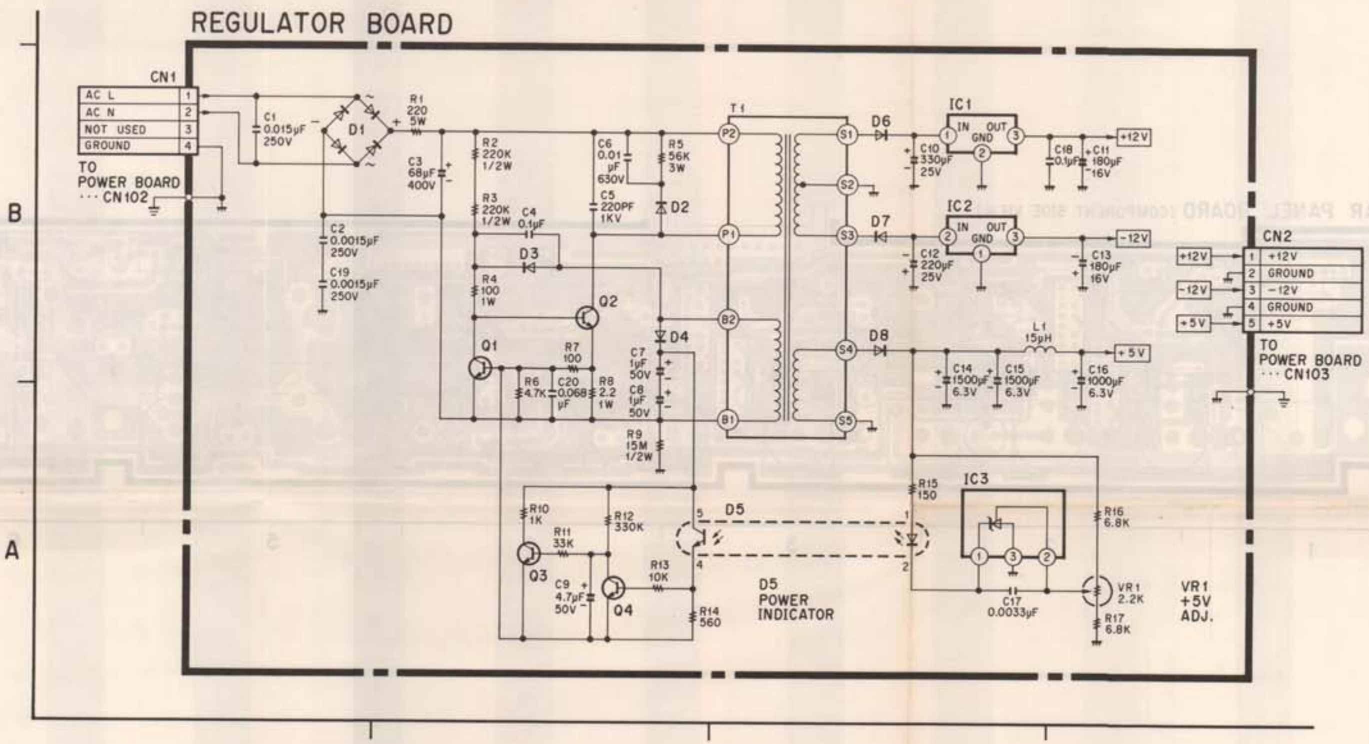
REAR PANEL BOARD (PATTERN SIDE VIEW)



SCHEMATIC DIAGRAM OF REGULATOR BOARD

<Index>

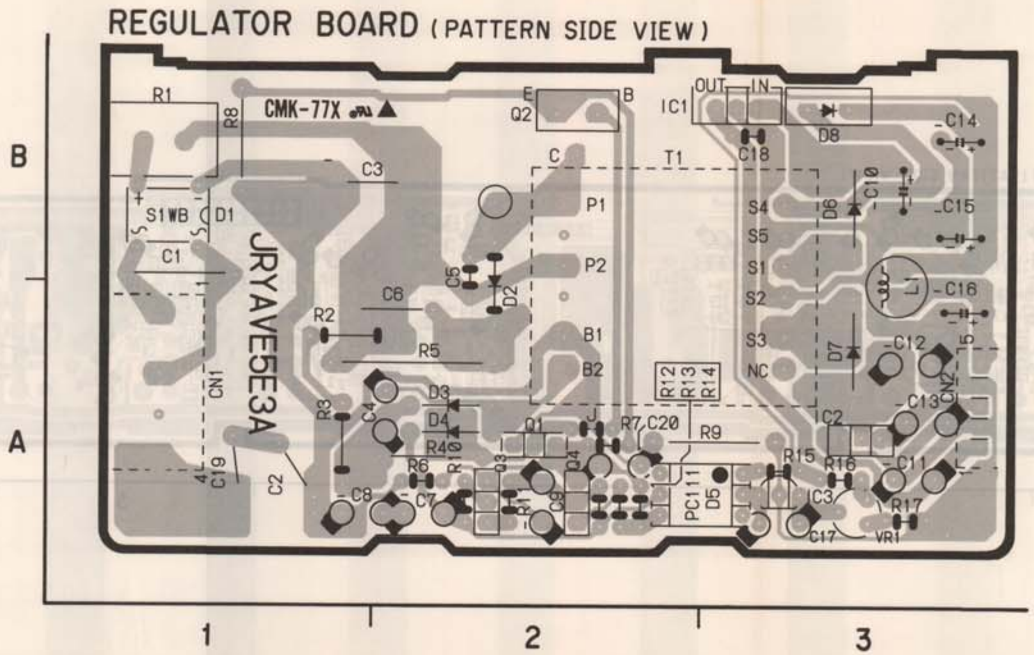
IC1	B3
IC2	B3
IC3	A3
Q1	B2
Q2	B2
Q3	A2
Q4	A2
D1	B1
D2	B2
D3	B2
D4	B2
D5	A3
D6	B3
D7	B3
D8	B3



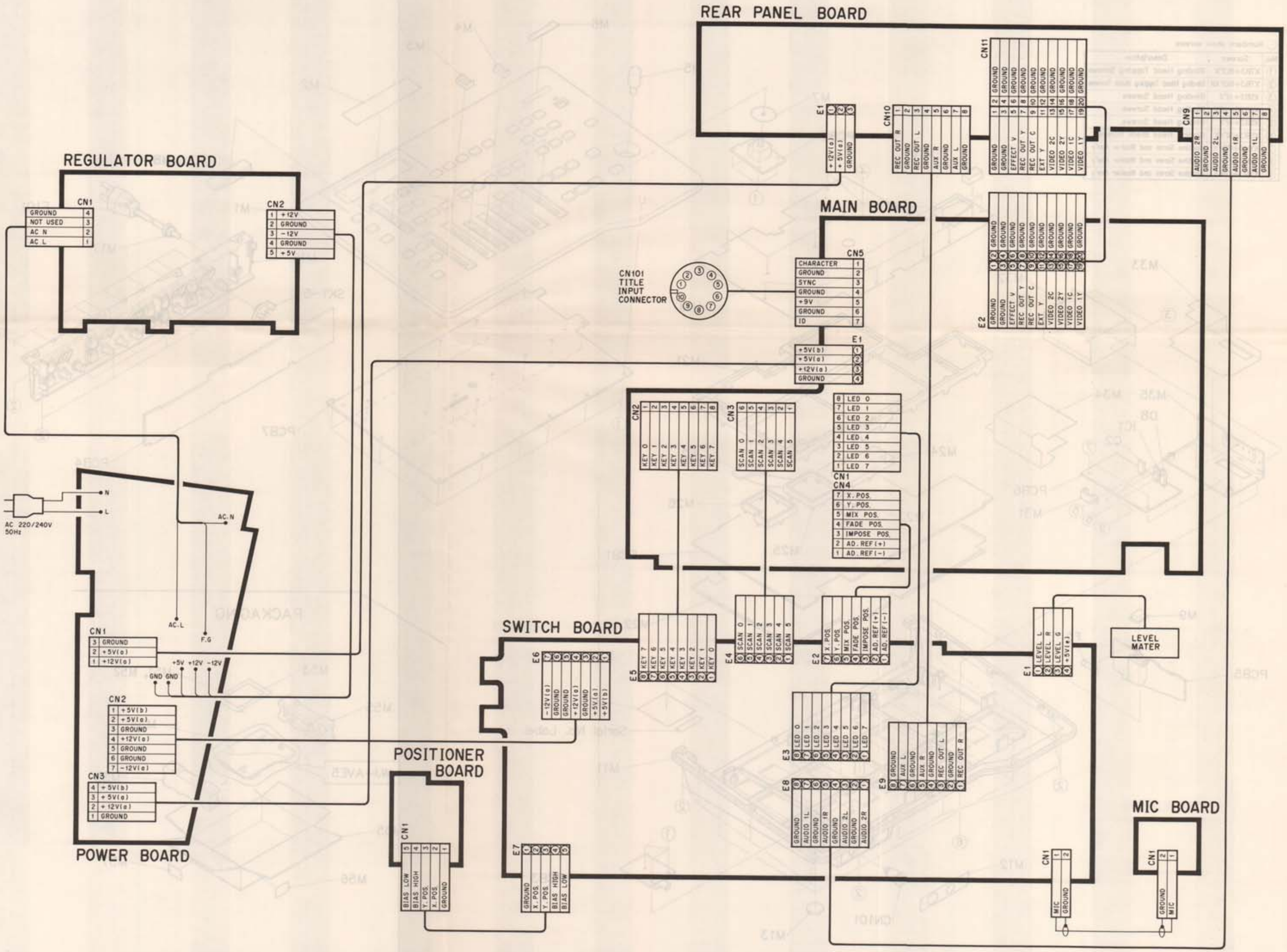
CONDUCTOR VIEW OF REGULATOR BOARD

<Index>

IC1	B3
IC2	A3
IC3	A3
Q1	A2
Q2	B2
Q3	A2
Q4	A2
D1	B1
D2	B2
D3	A2
D4	A2
D5	A3
D6	B3
D7	A3
D8	B3



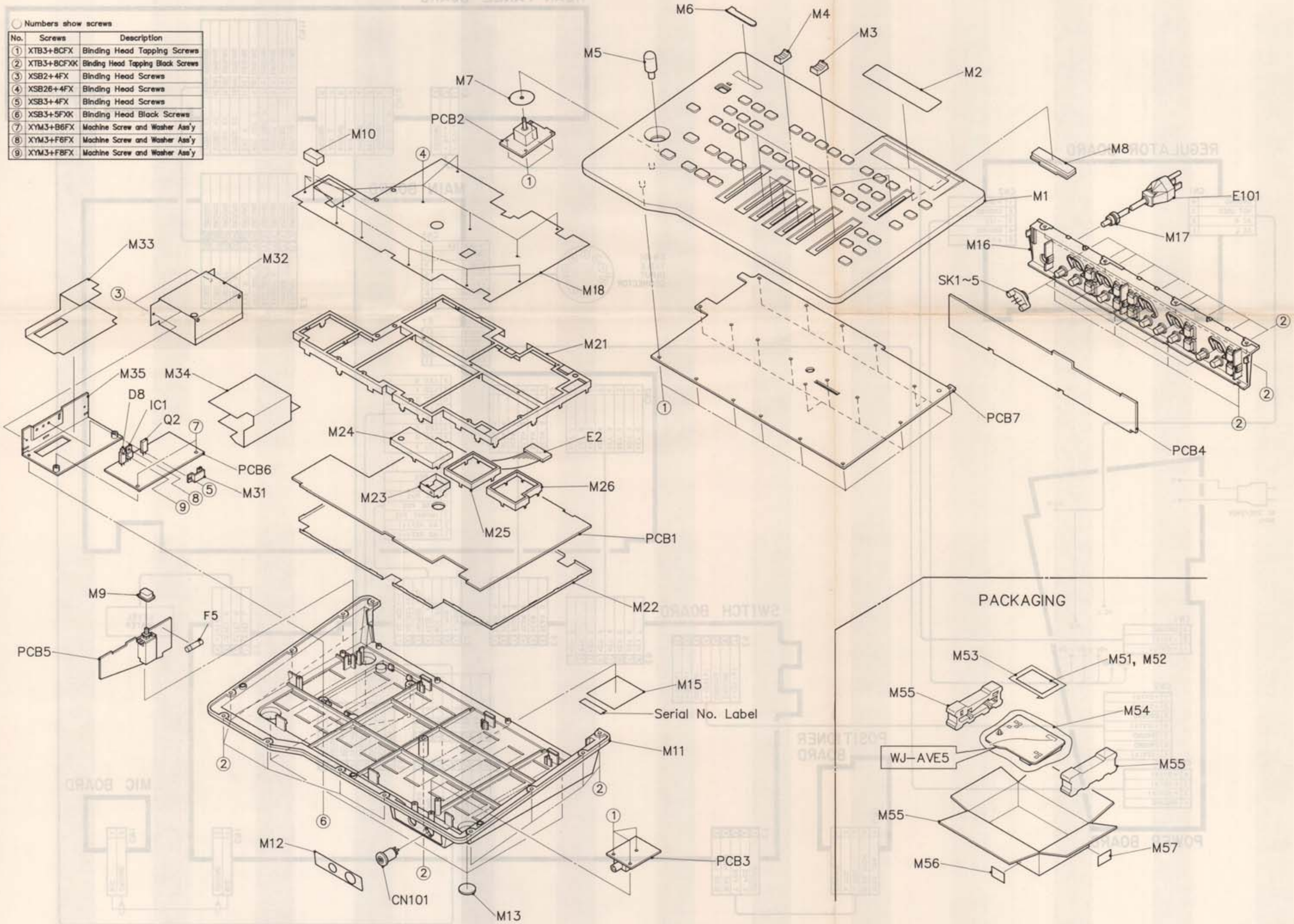
WIRING DIAGRAM



EXPLODED VIEW

◯ Numbers show screws

No.	Screws	Description
1	XTB3+8CFX	Binding Head Tapping Screws
2	XTB3+8CFXK	Binding Head Tapping Black Screws
3	XSB2+4FX	Binding Head Screws
4	XSB26+4FX	Binding Head Screws
5	XSB3+4FX	Binding Head Screws
6	XSB3+5FXK	Binding Head Black Screws
7	XYM3+B6FX	Machine Screw and Washer Ass'y
8	XYM3+F6FX	Machine Screw and Washer Ass'y
9	XYM3+F8FX	Machine Screw and Washer Ass'y



REPLACEMENT PARTS LIST

Important Notice

1. Components identified by "⚠" mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
2. Printed circuit board assembly with mark (NLA) is no longer available after production discontinuation of the complete set.

MISCELLANEOUS

REF.NO.	PART NO.	DESCRIPTION
IC1	AN78M12	IC
Q2	2SC3866	Transistor
D8	ERC20M02	Diode
F5 ⚠	XBA2C16ET0A	Current Fuse 1.6A 250V
CN101	YWD0111N618	10-pin Title Input Connector
SK1-5	YWM1824	Terminal Connector
E101 ⚠	YWKP56LT2F22	AC Power Cord for WJ-AVE5/A
	YWGTBS2F	AC Power Cord for WJ-AVE5/B
	YWKP4192F22	AC Power Cord for WJ-AVE5/C,G
E102	YFCD20ACCAP	Insulator
M1	YWV0MA0084AN	Upper Cover Assy
M2	YWV5WA1115A4	Display Panel
M3	YWV5RA0300A3	Slied Knob A
M4	YWV5RA0301A3	Slied Knob B
M5	YWV4RA0087A4	Positioner Lever
M6	YWV7PA0086A3	Panasonic Badge
M7	YWV2VA0038A4	Lever Barrier
M8	YWLI1244	Level Meter Unit
M9	YWV6JA0105A4	Power Button
M10	YWV2FA0493A4	Cushion for Printed Board
M11	YWV9AA0654AN	Bottom Cover Assy
M12	YWV5WA1116A4	Connector Panel
M13	YWV5LA0036B4	Rubber Foot
M15 ⚠	YWV7QA2266A4	Main Label for WJ-AVE5/A
	YWV7QA2297A4	Main Label for WJ-AVE5/B
	YWV7QA2343A4	Main Label for WJ-AVE5/C
	YWV7QA2298A4	Main Label for WJ-AVE5/G
M16	YWV9AA0655AN	Rear Panel Assy
M17	YWSR4K4	Cord Clamp
M18	YWV2HA0883A1	Shield Plate

MAIN BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB1 (NLA)	YWJKBAVE5E1A	Printed Circuit Board Assy
IC1	YWNJM2246M	IC
IC2	YWNJM2233BM	IC
IC3	YWNJM2246M	IC
IC4	YWNJM2233BM	IC
IC5,6	YWM51271FP	IC
IC7	MC74HC4053F	IC
IC8-13	AN608P	IC
IC14-17	MN6550BS	IC
IC18	YWNJM3403AM	IC
IC20	NJM2904M	IC
IC21	YWNJM3403AM	IC
IC23	NJM2904M	IC
IC24-27	YWMC74HC374F	IC
IC28	YWLM1881M	IC
IC29	NJM319M	IC
IC31	MC74HC4053F	IC
IC32,33	AN608P	IC
IC201,203	YWM5M4C500L	IC
IC205,207	YWM5M4C500L	IC
IC209	MN53040LVX3	IC
IC210,212	YWM5M4C500L	IC
IC214,216	YWM5M4C500L	IC
IC218	MN53040LVX3	IC
IC219	MN676021PPS	IC
IC220	MN53100LBG	IC
IC221	MN188166CCP2	IC
IC222	MN53007LVW1	IC
IC223	MN53100LBH2	IC
IC224	YWUPD42101C3	IC
IC225	AN78L09	IC
IC226	MC74HC4053F	IC
IC401-403	YWSC7S08F	IC
IC501	M51951ASL	IC
IC502	AN78L05	IC
IC503	YWSC7S08F	IC
IC504	MN4528BS	IC
IC505	YWSC7SU04F	IC
IC506	YWSC7S08F	IC
IC507	YWSC7SU04F	IC
IC508,509	YWSC7S08F	IC
IC510	YWSC7SU04F	IC
Q1-3	2SD1328S	Transistor
Q4	XN4501	Transistor
Q5	2SB709-QRS	Transistor
Q6-9	2SD1328S	Transistor

REF.NO.	PART NO.	DESCRIPTION	
Q10	XN4501	Transistor	
Q11	2SB709-QRS	Transistor	
Q12	2SD1328S	Transistor	
Q13	2SD601-RS	Transistor	
Q14	2SB709-QRS	Transistor	
Q16	2SD601-RS	Transistor	
Q17	2SB709-QRS	Transistor	
Q19	2SD1328S	Transistor	
Q20	2SD601-RS	Transistor	
Q21,22	2SD1328S	Transistor	
Q23,24	2SD601-RS	Transistor	
Q201	2SK198-Q	Transistor	
Q202,203	2SK198-Q	FET	
Q204	2SK198-Q	Transistor	
Q205	2SK198-Q	FET	
Q401,501	2SB709-QRS	Transistor	
Q502,503	2SB709-QRS	Transistor	
D201-203	1SV153	Diode	
D205-208	1SV153	Diode	
D401-404	1SS99	Diode	
R1	YF2116754JT	Carbon	750K ohms 1/16W
R2	YF2116433GT	Carbon	43K ohms 1/16W
R3	YF2116122JT	Carbon	1.2K ohms 1/16W
R4	YF2116222GT	Carbon	2.2K ohms 1/16W
R5	YF2116391JT	Carbon	390 ohms 1/16W
R6	YF2116223JT	Carbon	22K ohms 1/16W
R8	L311J103J332	Thermistor	
R9	YF2116102GT	Carbon	1K ohms 1/16W
R10	YF2116474JT	Carbon	470K ohms 1/16W
R11	YF2116512JT	Carbon	5.1K ohms 1/16W
R12,13	YF2116203JT	Carbon	20K ohms 1/16W
R14	YF2116101JT	Carbon	100 ohms 1/16W
R15-17	YF2116102GT	Carbon	1K ohms 1/16W
R18	YF2116621JT	Carbon	620 ohms 1/16W
R19-21	YF2116332JT	Carbon	3.3K ohms 1/16W
R22	YF2116153JT	Carbon	15K ohms 1/16W
R23	YF2116512JT	Carbon	5.1K ohms 1/16W
R24,25	YF2116153JT	Carbon	15K ohms 1/16W
R26-28	YF2116103JT	Carbon	10K ohms 1/16W
R29-34	YF2116510JT	Carbon	51 ohms 1/16W
R35-37	YF2116103JT	Carbon	10K ohms 1/16W
R38-40	YF2116102GT	Carbon	1K ohms 1/16W
R41	YF2116103JT	Carbon	10K ohms 1/16W
R42	YF2116331JT	Carbon	330 ohms 1/16W
R43	YF2116754JT	Carbon	750K ohms 1/16W
R44	YF2116433GT	Carbon	43K ohms 1/16W
R45	YF2116122JT	Carbon	1.2K ohms 1/16W
R46	YF2116223JT	Carbon	22K ohms 1/16W
R47	YF2116222GT	Carbon	2.2K ohms 1/16W
R49	L311J103J332	Thermistor	
R50	YF2116102GT	Carbon	1K ohms 1/16W
R51	YF2116474JT	Carbon	470K ohms 1/16W
R52	YF2116512JT	Carbon	5.1K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R54	YF2116620JT	Carbon	62 ohms 1/16W
R55	YF2116101JT	Carbon	100 ohms 1/16W
R56,57	YF2116203JT	Carbon	20K ohms 1/16W
R58-60	YF2116102GT	Carbon	1K ohms 1/16W
R61	YF2116621JT	Carbon	620 ohms 1/16W
R62	YF2116391JT	Carbon	390 ohms 1/16W
R63-65	YF2116332JT	Carbon	3.3K ohms 1/16W
R66,67	YF2116511JT	Carbon	510 ohms 1/16W
R68	YF2116153JT	Carbon	15K ohms 1/16W
R69	YF2116512JT	Carbon	5.1K ohms 1/16W
R70,71	YF2116153JT	Carbon	15K ohms 1/16W
R73-75	YF2116103JT	Carbon	10K ohms 1/16W
R76-81	YF2116510JT	Carbon	51 ohms 1/16W
R82-84	YF2116103JT	Carbon	10K ohms 1/16W
R85-87	YF2116102GT	Carbon	1K ohms 1/16W
R88	YF2116103JT	Carbon	10K ohms 1/16W
R89	YF2116222GT	Carbon	2.2K ohms 1/16W
R90	YF2116512JT	Carbon	5.1K ohms 1/16W
R92	YF2116102GT	Carbon	1K ohms 1/16W
R93	YF2116222GT	Carbon	2.2K ohms 1/16W
R95	YF2116102GT	Carbon	1K ohms 1/16W
R96	YF2116511JT	Carbon	510 ohms 1/16W
R98	YF2116102GT	Carbon	1K ohms 1/16W
R100	YF2116512JT	Carbon	5.1K ohms 1/16W
R101	YF2116102GT	Carbon	1K ohms 1/16W
R102	YF2116511JT	Carbon	510 ohms 1/16W
R106	YF2116684JT	Carbon	680K ohms 1/16W
R107-109	YF2116103JT	Carbon	10K ohms 1/16W
R110	YF2116512JT	Carbon	5.1K ohms 1/16W
R111	YF2116102GT	Carbon	1K ohms 1/16W
R112	YF2116123JT	Carbon	12K ohms 1/16W
R113	YF2116243JT	Carbon	24K ohms 1/16WF
R114	YF2116393GT	Carbon	39K ohms 1/16W
R115	YF2116103JT	Carbon	10K ohms 1/16W
R116	YW2116305JT	Carbon	3M ohms
R117	YF2116332JT	Carbon	3.3K ohms 1/16W
R118	YF2116103JT	Carbon	10K ohms 1/16W
R119	YF2116222GT	Carbon	2.2K ohms 1/16W
R120	YF2116332JT	Carbon	3.3K ohms 1/16W
R121	YF2116222GT	Carbon	2.2K ohms 1/16W
R123	YF2116620JT	Carbon	62 ohms 1/16W
R125,126	YF2116393GT	Carbon	39K ohms 1/16W
R127-133	YF2116101JT	Carbon	100 ohms 1/16W
R134-137	YF2116332JT	Carbon	3.3K ohms 1/16W
R138	YF2116101JT	Carbon	100 ohms 1/16W
R139,140	YF2116102GT	Carbon	1K ohms 1/16W
R201-226	YF2116331JT	Carbon	330 ohms 1/16W
R228-234	YF2116331JT	Carbon	330 ohms 1/16W
R235	YF2116103JT	Carbon	10K ohms 1/16W
R237	YF2116511JT	Carbon	510 ohms 1/16W
R238	YF2116752JT	Carbon	7.5K ohms 1/16W
R239	YF2116332JT	Carbon	3.3K ohms 1/16W
R242-266	YF2116331JT	Carbon	330 ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R267	YF2116102GT	Carbon	1K ohms 1/16W
R269	YF2116103JT	Carbon	10K ohms 1/16W
R271-275	YF2116331JT	Carbon	330 ohms 1/16W
R276	YF2116103JT	Carbon	10K ohms 1/16W
R277	YF2116511JT	Carbon	510 ohms 1/16W
R279	YF2116752JT	Carbon	7.5K ohms 1/16W
R280	YF2116332JT	Carbon	3.3K ohms 1/16W
R282,284	YF2116511JT	Carbon	510 ohms 1/16W
R285	YF2116511JT	Carbon	510 ohms 1/16W
R286	YF2116332JT	Carbon	3.3K ohms 1/16W
R291	YW2116105JT	Carbon	1M ohms 1/16W
R292,293	YF2116104JT	Carbon	100K ohms 1/16W
R296-309	YF2116331JT	Carbon	330 ohms 1/16W
R310	YF2116332JT	Carbon	3.3K ohms 1/16W
R311	YF2116103JT	Carbon	10K ohms 1/16W
R312,313	YF2116332JT	Carbon	3.3K ohms 1/16W
R314,315	YF2116202JT	Carbon	2K ohms 1/16W
R317,318	YF2116102GT	Carbon	1K ohms 1/16W
R319	YF2116104JT	Carbon	100K ohms 1/16W
R320	YF2116102GT	Carbon	1K ohms 1/16W
R321	YF2116104JT	Carbon	100K ohms 1/16W
R324	YF2116101JT	Carbon	100 ohms 1/16W
R325	YF2116332JT	Carbon	3.3K ohms 1/16W
R326	YF2116101JT	Carbon	100 ohms 1/16W
R327	YF2116362JT	Carbon	3.6K ohms 1/16W
R328	YF2116101JT	Carbon	100 ohms 1/16W
R329,330	YF2116511JT	Carbon	510 ohms 1/16W
R331,332	YF2116331JT	Carbon	330 ohms 1/16W
R333	YF2116101JT	Carbon	100 ohms 1/16W
R334	YF2116331JT	Carbon	330 ohms 1/16W
R338	YF2116103JT	Carbon	10K ohms 1/16W
R340	YF2116332JT	Carbon	3.3K ohms 1/16W
R341	YF2116331JT	Carbon	330 ohms 1/16W
R342	YF2116101JT	Carbon	100 ohms 1/16W
R343	YF2116331JT	Carbon	330 ohms 1/16W
R344	YF2116101JT	Carbon	100 ohms 1/16W
R345	YF2116511JT	Carbon	510 ohms 1/16W
R401-404	YF2116474JT	Carbon	470K ohms 1/16W
R405-425	YF2116331JT	Carbon	330 ohms 1/16W
R426	YF2116202JT	Carbon	2K ohms 1/16W
R427-433	YF2116331JT	Carbon	330 ohms 1/16W
R434	YF2116102GT	Carbon	1K ohms 1/16W
R435,436	YF2116202JT	Carbon	2K ohms 1/16W
R437,438	YF2116102GT	Carbon	1K ohms 1/16W
R441-444	YF2116100JT	Carbon	10 ohms 1/16W
R501	YF2116392JT	Carbon	3.9K ohms 1/16W
R502	YF2116104JT	Carbon	100K ohms 1/16W
R503	YF2116103JT	Carbon	10K ohms 1/16W
R505	YF2116511JT	Carbon	510 ohms 1/16W
R509	YF2116331JT	Carbon	330 ohms 1/16W
R510	YF2116102GT	Carbon	1K ohms 1/16W
R511,512	YF2116101JT	Carbon	100 ohms 1/16W
R513-544	YF2116331JT	Carbon	330 ohms 1/16W
R545	YF2116101JT	Carbon	100 ohms 1/16W
R546	YF2116331JT	Carbon	330 ohms 1/16W
R548	YF2116104JT	Carbon	100K ohms 1/16W
R549	YF2116102GT	Carbon	1K ohms 1/16W
R550	YW2116105JT	Carbon	1M ohms 1/16W
R551-572	YF2116331JT	Carbon	330 ohms 1/16W
R573	YF2116392JT	Carbon	3.9K ohms 1/16W
R574	YF2116332JT	Carbon	3.3K ohms 1/16W
R575	YF2116104JT	Carbon	100K ohms 1/16W
R576	YF2116102GT	Carbon	1K ohms 1/16W
R577	YW2116105JT	Carbon	1M ohms 1/16W
R578-599	YF2116331JT	Carbon	330 ohms 1/16W
R600	YF2116392JT	Carbon	3.9K ohms 1/16W
R601,603	YF2116511JT	Carbon	510 ohms 1/16W
R605-609	YF2116331JT	Carbon	330 ohms 1/16W
R610,611	YF2116103JT	Carbon	10K ohms 1/16W
R612,613	YF2116102GT	Carbon	1K ohms 1/16W
R614,615	YF2116333GT	Carbon	33K ohms 1/16W
R616	YF2116103JT	Carbon	10K ohms 1/16W
R621,622	YF2116511JT	Carbon	510 ohms 1/16W
R624	YF2116511JT	Carbon	510 ohms 1/16W
R625	YF2116392JT	Carbon	3.9K ohms 1/16W
R626	YF2116332JT	Carbon	3.3K ohms 1/16W
R627-629	YF2116511JT	Carbon	510 ohms 1/16W
R632-637	YF2116511JT	Carbon	510 ohms 1/16W
VR1	EVM1DSW30B54	Variable Resistor	50K ohms
VR2	EVM1DSW30B24	Variable Resistor	20K ohms
VR3	EVM1DSW30B14	Variable Resistor	10K ohms
VR4,5	EVM1DSW30B13	Variable Resistor	1K ohms
VR6,7	EVM1DSW30B34	Variable Resistor	30K ohms
VR8	EVM1DSW30B24	Variable Resistor	20K ohms
VR9	EVM1DSW30B54	Variable Resistor	50K ohms
VR10	EVM1DSW30B24	Variable Resistor	20K ohms
VR11	EVM1DSW30B14	Variable Resistor	10K ohms
VR12,13	EVM1DSW30B13	Variable Resistor	1K ohms
VR14,15	EVM1DSW30B34	Variable Resistor	30K ohms
VR16	EVM1DSW30B24	Variable Resistor	20K ohms
VR17	EVM1DSW30B13	Variable Resistor	1K ohms
VR18	EVM1DSW30BQ2	Variable Resistor	470 ohms
VR19	EVM1DSW30B13	Variable Resistor	1K ohms
VR20	EVM1DSW30BQ2	Variable Resistor	470 ohms
VR201,502	EVM1DSW30B14	Variable Resistor	10K ohms
RA1-4	YWRKM10L102F	Block Resistor	
RA5	EXBM16V101JA	Block Resistor	
C1,2	ECEA1AKN100	Electrolytic	10 µF 10V
C3	ECEA0JKS101	Electrolytic	100 µF 6.3V
C4,5	YWT316B104MT	Ceramic	0.1 µF
C6	ECEA0JKS101	Electrolytic	100 µF 6.3V
C7	ECEA1HKS010	Electrolytic	1 µF 50V (KS)
C8	ECEA1HKSR47	Electrolytic	0.47 µF 50V
C9	ECEA1HKS010	Electrolytic	1 µF 50V (KS)
C10	YF400201CHJT	Ceramic	200 pF
C11,12	YWT316B473MT	Ceramic	0.047 µF
C13	YF400102XKT	Ceramic	1000 pF
C14	YWT316B104MT	Ceramic	0.1 µF
C15	ECEA0JKS101	Electrolytic	100 µF 6.3V
C16	ECEA1AKA220	Electrolytic	22 µF 10V

REF.NO.	PART NO.	DESCRIPTION	
C17	ECSF1EE156	Tantalum	15 µF 25V
C18	ECEA1AKA220	Electrolytic	22 µF 10V
C19	ECEA1CKA470	Electrolytic	47 µF 16V
C20	ECEA1AKA220	Electrolytic	22 µF 10V
C21	ECEA1CKA470	Electrolytic	47 µF 16V
C22	YF400102XKT	Ceramic	1000 pF
C23,24	YWT316B104MT	Ceramic	0.1 µF
C25	YF400102XKT	Ceramic	1000 pF
C26	YWT316B104MT	Ceramic	0.1 µF
C27	ECEA1HKS010	Electrolytic	1 µF 50V (KS)
C28	YWT316B104MT	Ceramic	0.1 µF
C29	ECEA0JKA470	Electrolytic	47 µF 6.3VV
C30	YWT316B104MT	Ceramic	0.1 µF
C31	ECEA1HKS010	Electrolytic	1 µF 50V (KS)
C32	YWT316B104MT	Ceramic	0.1 µF
C34	YF400561CHJT	Ceramic	560 pF
C35	YF400102XKT	Ceramic	1000 pF
C36	YF400103XMT	Ceramic	0.01 µF
C37	YWT316B104MT	Ceramic	0.1 µF
C38-41	YF400103XMT	Ceramic	0.01 µF
C42	YWT316B104MT	Ceramic	0.1 µF
C43	YF400103XMT	Ceramic	0.01 µF
C44	ECEA1AKA220	Electrolytic	22 µF 10V
C45	ECEA1AKA470	Electrolytic	47 µF 10V
C46	ECEA1HKA2R2	Electrolytic	2.2 µF 50V
C47	ECEA1AKA470	Electrolytic	47 µF 10V
C48	ECEA1HKA2R2	Electrolytic	2.2 µF 50V
C49	ECEA1AKA470	Electrolytic	47 µF 10V
C50	ECSF1AE106	Tantalum	10 µF 10V
C51	YF400103XMT	Ceramic	0.01 µF
C52	ECEA1HSN2R2	Electrolytic	2.2 µF 50V
C53	ECEA1AKA470	Electrolytic	47 µF 10V
C54	YWT316B104MT	Ceramic	0.1 µF
C55	ECSF1AE106	Tantalum	10 µF 10V
C56-58	YWT316B104MT	Ceramic	0.1 µF
C59	ECSF1AE106	Tantalum	10 µF 10V
C60,61	YWT316B104MT	Ceramic	0.1 µF
C62,63	ECEA1AKN100	Electrolytic	10 µF 10V
C64	ECEA0JKS101	Electrolytic	100 µF 6.3V
C65,66	YWT316B104MT	Ceramic	0.1 µF
C67	ECEA0JKS101	Electrolytic	100 µF 50V
C68	ECEA1HKS010	Electrolytic	1 µF 50V (KS)
C69	ECEA1HKSR47	Electrolytic	0.47 µF 50V
C70	ECEA1HKS010	Electrolytic	1 µF 50V (KS)
C71	YF400201CHJT	Ceramic	200 pF
C72,73	YWT316B473MT	Ceramic	0.047 µF
C74	YF400102XKT	Ceramic	1000 pF
C75	YWT316B104MT	Ceramic	0.1 µF
C76	ECEA0JKS101	Electrolytic	100 µF 6.3V
C77	ECEA1AKA220	Electrolytic	22 µF 10V
C78	ECSF1EE156	Tantalum	10 µF 25V
C79	ECEA1AKA220	Electrolytic	22 µF 10V
C80	ECEA1CKA470	Electrolytic	47 µF 16V
C81	ECEA1AKA220	Electrolytic	22 µF 10V
C82	ECEA1CKA470	Electrolytic	47 µF 16V
C83	YF400102XKT	Ceramic	1000 pF
C84,85	YWT316B104MT	Ceramic	0.1 µF
C86	YF400102XKT	Ceramic	1000 pF
C87	YWT316B104MT	Ceramic	0.1 µF
C88	ECEA1HKS010	Electrolytic	1 µF 50V (KS)
C89	YWT316B104MT	Ceramic	0.1 µF
C90	ECEA0JKA470	Electrolytic	47 µF 6.3V
C91	YWT316B104MT	Ceramic	0.1 µF
C92	ECEA1HKS010	Electrolytic	1 µF 50V (KS)
C93	YWT316B104MT	Ceramic	0.1 µF
C95	YF400561CHJT	Ceramic	560 pF
C96	YF400102XKT	Ceramic	1000 pF
C97-102	YF400103XMT	Ceramic	0.01 µF
C103	ECEA1AKA220	Electrolytic	22 µF 10V
C104	ECEA1AKA470	Electrolytic	47 µF 10V
C105	ECEA1HKA2R2	Electrolytic	2.2 µF 50V
C106	ECEA1AKA470	Electrolytic	47 µF 10V
C107	ECEA1HKA2R2	Electrolytic	2.2 µF 50V
C108	ECEA1AKA470	Electrolytic	47 µF 10V
C109	ECSF1AE106	Tantalum	10 µF 10V
C110	YF400103XMT	Ceramic	0.01 µF
C111	ECEA1HSN2R2	Electrolytic	2.2 µF 50V
C112	ECEA1AKA470	Electrolytic	47 µF 10V
C113	YWT316B104MT	Ceramic	0.1 µF
C114	ECSF1AE106	Tantalum	10 µF 10V
C115,116	YWT316B104MT	Ceramic	0.1 µF
C117	ECSF1AE106	Tantalum	10 µF 10V
C118	YWT316B104MT	Ceramic	0.1 µF
C119-122	ECSF1AE106	Tantalum	10 µF 10V
C123	YWT316B104MT	Ceramic	0.1 µF
C124	ECEA1AKA470	Electrolytic	47 µF 10V
C125,126	YWT316B104MT	Ceramic	0.1 µF
C127	ECEA0JKA470	Electrolytic	47 µF 6.3V
C128	YWT316B104MT	Ceramic	0.1 µF
C129	ECEA1AKA220	Electrolytic	22 µF 10V
C130	YWT316B104MT	Ceramic	0.1 µF
C131	ECEA0JKA470	Electrolytic	47 µF 6.3V
C132	YWT316B104MT	Ceramic	0.1 µF
C134,135	ECEA1AKA220	Electrolytic	22 µF 10V
C136-144	YWT316B104MT	Ceramic	0.1 µF
C145	ECEA1CKA470	Electrolytic	47 µF 16V
C146	ECEA1AKA220	Electrolytic	22 µF 10V
C147	ECEA1CKA470	Electrolytic	47 µF 16V
C148-150	ECEA1AKA220	Electrolytic	22 µF 10V
C151	YF400100CHDT	Ceramic	10 pF
C152-155	YWT316B104MT	Ceramic	0.1 µF
C156-159	YF400102XKT	Ceramic	1000 pF
C160-163	YF400330CHJT	Ceramic	33 pF
C164,165	YF400470CHJT	Ceramic	47 pF
C166	ECSF1AE106	Tantalum	10 µF 10V
C167	ECST1AD336ZR	Electrolytic	33 µF10V
C168,169	ECSF1AE106	Tantalum	10 µF 10V
C170,171	YF400430CHJT	Ceramic	43 pF (CH)
C201	ECEA0JU102	Electrolytic	1000 µF 6.3V
C202,203	ECSF1AE106	Tantalum	10 µF 10V

REF.NO.	PART NO.	DESCRIPTION	
C204-208	YWT316B104MT	Ceramic	0.1 µF
C209	ECSF1AE106	Tantalum	10 µF 10V
C210	YF400330CHJT	Ceramic	33 pF
C211	YF400220CHJT	Ceramic	22 pF
C212	YF400332XKT	Ceramic	3300 pF
C213	ECEA1HKS2R2	Electrolytic	2.2 µF 50V
C215	ECEA0JU102	Electrolytic	1000 µF 6.3V
C216,217	ECSF1AE106	Tantalum	10 µF 10V
C218-222	YWT316B104MT	Ceramic	0.1 µF
C223	ECSF1AE106	Tantalum	10 µF 10V
C224	YF400330CHJT	Ceramic	33 pF
C225	YF400220CHJT	Ceramic	22 pF
C226	YF400332XKT	Ceramic	3300 pF
C227	ECEA1HKS2R2	Electrolytic	2.2 µF 50V
C229-232	ECEA1CKA470	Electrolytic	47 µF 16V
C233	ECSF1AE106	Tantalum	10 µF 10V
C234,235	YWT316B104MT	Ceramic	0.1 µF
C236	ECSF1AE106	Tantalum	10 µF 10V
C237	YWT316B104MT	Ceramic	0.1 µF
C238	ECSF1AE106	Tantalum	10 µF 10V
C239-242	YWT316B104MT	Ceramic	0.1 µF
C243	ECSF1AE106	Tantalum	10 µF 10V
C244	YWT316B104MT	Ceramic	0.1 µF
C245,246	YF400470CHJT	Ceramic	47 pF
C247	YF400201CHJT	Ceramic	200 pF
C249	YWT316B104MT	Ceramic	0.1 µF
C250	ECSF1AE106	Tantalum	10 µF 10V
C251	ECSF1AE336	Tantalum	33 µF 10V
C252	YF400103XMT	Ceramic	0.01 µF
C253	ECEA1HKS2R2	Electrolytic	2.2 µF 50V
C254	YF400103XMT	Ceramic	0.01 µF
C255	ECEA1HKS2R2	Electrolytic	2.2 µF 50V
C257,258	YF400820CHJT	Ceramic	82 pF
C259	YF400201CHJT	Ceramic	200 pF
C261-264	ECSF1AE106	Tantalum	10 µF 10V
C265	YWT316B104MT	Ceramic	0.1 µF
C266	YF400330CHJT	Ceramic	33 pF
C267	YF400100CHDT	Ceramic	10 pF
C268	YF400222XKT	Ceramic	2200 pF
C269,270	YF400330CHJT	Ceramic	33 pF
C271,272	ECSF1AE106	Tantalum	10 µF 10V
C273	ECEA1HKS2R2	Electrolytic	2.2 µF 50V
C274-280	YWT316B104MT	Ceramic	0.1 µF
C281	YF400151SLKT	Ceramic	150 pF
C290	ECSF1AE106	Tantalum	10 µF 10V
C401	YF400220CHJT	Ceramic	22 pF
C402-405	YF400103XMT	Ceramic	0.01 µF
C406	YF400220CHJT	Ceramic	22 pF
C407-410	YF400103XMT	Ceramic	0.01 µF
C411	ECEA1AKA470	Electrolytic	47 µF 10V
C412	ECEA0JKA470	Electrolytic	47 µF 6.3V
C413	ECEA1AKA470	Electrolytic	47 µF 10V
C414	ECEA0JKA470	Electrolytic	47 µF 6.3V
C415	YF400390CHJT	Ceramic	39 pF
C418	YF400390CHJT	Ceramic	39 pF
C419,420	YF400103XMT	Ceramic	0.01 µF
C421-444	YF400101SLKT	Ceramic	100 pF
C445	ECSF1AE106	Tantalum	10 µF 10V
C446-461	YF400330CHJT	Ceramic	33 pF
C501	YWT316B104MT	Ceramic	0.1 µF
C502	ECEA1CKA220	Electrolytic	22 µF 16V
C503	ECEA1CU102	Electrolytic	1000 µF 16V
C504	ECSF1AE106	Tantalum	10 µF 10V
C505	YF400330CHJT	Ceramic	33 pF
C506	YWT316B104MT	Ceramic	0.1 µF
C508	YF400101CHJT	Ceramic	100 pF
C509	YWT316B104MT	Ceramic	0.1 µF
C510	YF400390CHJT	Ceramic	39 pF
C511	ECEA1AKA220	Electrolytic	22 µF 10V
C512	YF400101CHJT	Ceramic	100 pF
C513	YWT316B104MT	Ceramic	0.1 µF
C514	ECEA1AKA220	Electrolytic	22 µF 10V
C515,516	ECSF1AE106	Tantalum	10 µF 10V
C517	YF400100CHDT	Ceramic	10 pF
C518	YF400103XMT	Ceramic	0.01 µF
C519,520	YF400101SLKT	Ceramic	100 pF
C521	YF400330CHJT	Ceramic	33 pF
C522	ECEA1AKA220	Electrolytic	22 µF 10V
C523-535	YF400330CHJT	Ceramic	33 pF
C537	YF400330CHJT	Ceramic	33 pF
C538	ECST1AD336ZR	Tantalum	33µF10V
C539-541	YF400201CHJT	Ceramic	200 pF
C542	YWT316B104MT	Ceramic	0.1 µF
C543,544	YF400330CHJT	Ceramic	33 pF
C545	ECSF1EE225	Tantalum	2.2 µF 10V
C546,547	YF400330CHJT	Ceramic	33 pF
C550-553	YF400220CHJT	Ceramic	22 pF
C554,555	YF400330CHJT	Ceramic	33 pF
C650,651	ECQV1H104JZ	Plastic	0.1 µF 50V
CT1,2	YFTZ03R200FR	Trimmer Capacitor	20 pF
L1	ELESE101KA	Coil	100 µH
L2,3	ELESE220KA	Coil	22 µH
L4	ELESE101KA	Coil	100 µH
L5-10	ELESE220KA	Coil	22 µH
L13,14	ELESE220KA	Coil	22 µH
L15,16	LF7R5SFT220K	Coil	22 µH
L17,18	ELESE220KA	Coil	22 µH
L19,20	YWF3216E220K	Coil	22 µH
L201	YWELESN1R0MA	Coil	1 µH
L202	YWS5LE0381	Coil	380 µH
L203-205	YWELESN1R0MA	Coil	1 µH
L206	YWS5LE0381	Coil	380 µH
L207,208	YWELESN1R0MA	Coil	1 µH
L209	ELESE8R2KA	Coil	8.2 µH
L210	YWELESN1R0MA	Coil	1 µH
L211-213	ELC08D082	Coil	8.2 µH
L214	YWELESN1R0MA	Coil	1 µH
L215	YWS5LE0381	Coil	380 µH
L501,502	YWELESN1R0MA	Coil	1 µH
X1,2	YFMS30917M10	Crystal Oscillator	

REF.NO.	PART NO.	DESCRIPTION
X201	YWN8R4R40625	Crystal Oscillator
X202	EF0GC8004A4	Oscillator
X203	YFMS30917M10	Crystal Oscillator
CF1	YWYS30387	Filter
CF2,3	YWYS30384	Filter
CF4	YWYS30387	Filter
CF5,6	YWYS30384	Filter
CF7	YWYS30484	Filter
CF8	YWYS30386	Filter
CF9	YWYS30484	Filter
CF10	YWYS30386	Filter
CN1	YW530140810	8-pin Connector
CN2	YW530140810R	8-pin Connector
CN4	YW530140710Y	7-pin Connector
CN5	YW530140710	7-pin Connector
CN6	YWRE022TD19	2-pin Connector
J1,2	YF21160R00T	Jumper Resistor
J7,48	YF21160R00T	Jumper Resistor
J72,124	YF21160R00T	Jumper Resistor
J201,227	YF21160R00T	Jumper Resistor
J241,268	YF21160R00T	Jumper Resistor
J270,323	YF21160R00T	Jumper Resistor
J336,337	YF21160R00T	Jumper Resistor
J504,547	YF21160R00T	Jumper Resistor
J604,619	YF21160R00T	Jumper Resistor
CN3	YW530140610	6-pin Connector
E1-37	YWRCT2125TPV	Terminal
E201-211	YWRCT2125TPV	Terminal
E401,402	YWRCT2125TPV	Terminal
M21	YWV2HA0885A1	Shield Parts
M22	YWV2HA0886A1	Shield Parts
M23	YWV2HA0887A4	Shield Parts
M24	YWV2HA0889A4	Shield Parts
M25	YWV2HA0890A4	Shield Parts
M26	YWV2HA0891A4	Shield Parts

POSITIONER BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB2	YWJRAAVE5E1A	Printed Board
VR1	YWVL201104L	Variable Resistor
CN1	YW530150510	5-pin Connector

MIC BOARD

REF.NO.	PART NO.	DESCRIPTION
PCB3	YWJRAAVE5E1B	Printed Board
CN1	YW530150210	2-pin Connector
JK1	YWLJ23083090	Jack

REAR PANEL BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB4 (NLA)	YWJKYAVE5E1A	Printed Circuit Board Assy	
IC1,2	AN608P	IC	
IC3	YWNJM2246M	IC	
Q1-5	2SD601-RS	Transistor	
Q7-11	2SD601-RS	Transistor	
Q13	2SD601-RS	Transistor	
Q14,15	2SB709-QRS	Transistor	
Q16,17	2SD601-RS	Transistor	
Q18	2SB709-QRS	Transistor	
Q19,20	2SD601-RS	Transistor	
Q21,22	2SB709-QRS	Transistor	
Q23,24	2SD601-RS	Transistor	
Q25,26	2SB709-QRS	Transistor	
Q27,29	2SD601-RS	Transistor	
Q30-33	2SD601-RS	Transistor	
Q34,35	2SB709-QRS	Transistor	
Q36	2SD601-RS	Transistor	
Q37,38	2SB709-QRS	Transistor	
Q39,40	2SD601-RS	Transistor	
Q41,42	2SB709-QRS	Transistor	
Q43	2SD601-RS	Transistor	
D1-5	MA151K	Diode	
R1	YF2116750JT	Carbon	75 ohms 1/16W
R2	YF2116223JT	Carbon	22K ohms 1/16W
R3	YF2116332JT	Carbon	3.3K ohms 1/16W
R4-10	YF2116102GT	Carbon	1K ohms 1/16W
R11	YF2116911JT	Carbon	910 ohms 1/16W
R12	YF2116102GT	Carbon	1K ohms 1/16W
R13	YF2116392JT	Carbon	3.9K ohms 1/16W
R14,15	YF2116750JT	Carbon	75 ohms 1/16W
R16,17	YF2116202JT	Carbon	2K ohms 1/16W
R18	YF2116332JT	Carbon	3.3K ohms 1/16W
R19,20	YF2116202JT	Carbon	2K ohms 1/16W
R21	YF2116222GT	Carbon	2.2K ohms 1/16W
R23	YF2116104JT	Carbon	100K ohms 1/16W
R24	YF2116680JT	Carbon	68 ohms 1/16W
R26	YF2116332JT	Carbon	3.3K ohms 1/16W
R27	YF2116750JT	Carbon	75 ohms 1/16W
R28	YF2116102GT	Carbon	1K ohms 1/16W
R29	YF2116392JT	Carbon	3.9K ohms 1/16W
R30	YF2116223JT	Carbon	22K ohms 1/16W
R31	YF2116332JT	Carbon	3.3K ohms 1/16W
R32-37	YF2116102GT	Carbon	1K ohms 1/16W
R38	YF2116911JT	Carbon	910 ohms 1/16W
R39	YF2116102GT	Carbon	1K ohms 1/16W
R40,41	YF2116750JT	Carbon	75 ohms 1/16W
R42,43	YF2116202JT	Carbon	2K ohms 1/16W
R44	YF2116332JT	Carbon	3.3K ohms 1/16W
R45	YF2116222GT	Carbon	2.2K ohms 1/16W
R46,47	YF2116202JT	Carbon	2K ohms 1/16W

REF.NO.	PART NO.	DESCRIPTION	
R49	YF2116104JT	Carbon	100K ohms 1/16W
R50	YF2116680JT	Carbon	68 ohms 1/16W
R52	YF2116332JT	Carbon	3.3K ohms 1/16W
R53	YF2116104JT	Carbon	100K ohms 1/16W
R54	YF2116680JT	Carbon	68 ohms 1/16W
R55	YF2116102GT	Carbon	1K ohms 1/16W
R56	YF2116222GT	Carbon	2.2K ohms 1/16W
R57	YF2116474JT	Carbon	470K ohms 1/16W
R58	YF2116680JT	Carbon	68 ohms 1/16W
R59,60	YF2116104JT	Carbon	100K ohms 1/16W
R61,62	YF2116222GT	Carbon	2.2K ohms 1/16W
R63	YF2116332JT	Carbon	3.3K ohms 1/16W
R64	YF2116222GT	Carbon	2.2K ohms 1/16W
R65	YF2116474JT	Carbon	470K ohms 1/16W
R66,67	YF2116680JT	Carbon	68 ohms 1/16W
R68,69	YF2116104JT	Carbon	100K ohms 1/16W
R70	YF2116680JT	Carbon	68 ohms 1/16W
R71,72	YF2116222GT	Carbon	2.2K ohms 1/16W
R73,74	YF2116512JT	Carbon	5.1K ohms 1/16W
R75	YF2116103JT	Carbon	10K ohms 1/16W
R76,77	YF2116104JT	Carbon	100K ohms 1/16W
R78,79	YF2116680JT	Carbon	68 ohms 1/16W
R80,81	YF2116102GT	Carbon	1K ohms 1/16W
R83,84	YF2116102GT	Carbon	1K ohms 1/16W
R86	YF2116750JT	Carbon	75 ohms 1/16W
R87	YF2116511JT	Carbon	510 ohms 1/16W
R88	YF2116392JT	Carbon	3.9K ohms 1/16W
R89	YF2116223JT	Carbon	22K ohms 1/16W
R90-92	YF2116102GT	Carbon	1K ohms 1/16W
R93,94	YF2116750JT	Carbon	75 ohms 1/16W
R95	YF2116332JT	Carbon	3.3K ohms 1/16W
R96	YF2116222GT	Carbon	2.2K ohms 1/16W
R97	YF2116223JT	Carbon	22K ohms 1/16W
R98	YF2116332JT	Carbon	3.3K ohms 1/16W
R99	YF2116102GT	Carbon	1K ohms 1/16W
R100,101	YF2116101JT	Carbon	100 ohms 1/16W
R102	YF2116474JT	Carbon	470K ohms 1/16W
R103	YF2116332JT	Carbon	3.3K ohms 1/16W
R104,105	YF2116222GT	Carbon	2.2K ohms 1/16W
R106,107	YF2116102GT	Carbon	1K ohms 1/16W
R108	YF2116474JT	Carbon	470K ohms 1/16W
R109,110	YF2116102GT	Carbon	1K ohms 1/16W
R111	YF2116331JT	Carbon	330 ohms 1/16W
R112	YF2116221JT	Carbon	220 ohms 1/16W
R113	YF2116474JT	Carbon	470K ohms 1/16W
R114,115	YF2116102GT	Carbon	1K ohms 1/16W
R116	YF2116331JT	Carbon	330 ohms 1/16W
R117	YF2116221JT	Carbon	220 ohms 1/16W
R118	YF2116474JT	Carbon	470K ohms 1/16W
C1	ECEA1AKA220	Electrolytic	22 μF10V
C2	ECEA0GKA101	Electrolytic	100 μF4V
C3	ECEA1AKA470	Electrolytic	47 μF 10V
C4	ECEA0JKA221	Electrolytic	220 μF 6.3V
C5	YF400222XKT	Ceramic	2200 pF

REF.NO.	PART NO.	DESCRIPTION	
C6,7	ECEA1AKA470	Electrolytic	47 μF 10V
C8	ECEA0JU471	Electrolytic	470 μF 6.3V
C9	YWT316B104MT	Ceramic	0.1 μF
C10	ECEA1AKA220	Electrolytic	22 μF 10V
C11	ECEA0GKA101	Electrolytic	100 μF 4V
C12	ECEA1AKA470	Electrolytic	47 μF 10V
C13	ECEA0JKA221	Electrolytic	220 μF 6.3V
C14	YF400222XKT	Ceramic	2200 pF
C15	ECEA1AKA470	Electrolytic	47 μF 10V
C16	ECEA0JU471	Electrolytic	470 μF 6.3V
C17	YWT316B104MT	Ceramic	0.1 μF
C18	ECEA1AKA470	Electrolytic	47 μF 10V
C19	ECEA0JU471	Electrolytic	470 μF 6.3V
C20	ECEA1CKN4R7	Electrolytic	4.7 μF 16V
C21	ECEA0GKA470	Electrolytic	47 μF 4V
C22	ECEA0JU471	Electrolytic	470 μF 6.3V
C23	ECEA1CKN4R7	Electrolytic	4.7 μF 16V
C24	ECEA0GKA470	Electrolytic	47 μF 4V
C25	YF400222XKT	Ceramic	2200 pF
C26	ECEA0JU471	Electrolytic	470 μF 6.3V
C27	YF400222XKT	Ceramic	2200 pF
C28	ECEA0GKA470	Electrolytic	47 μF 4V
C29	YF400222XKT	Ceramic	2200 pF 6.3V
C30,31	ECEA0JU471	Electrolytic	470 μF 10V
C33	ECEA1AKA220	Electrolytic	22 μF 10V
C35	ECEA1AKA470	Electrolytic	47 μF 10V
C36	ECEA1AKA220	Electrolytic	22 μF 10V
C37,38	ECEA1AKA470	Electrolytic	47 μF 10V
C39	ECEA1EKA470	Electrolytic	47 μF 25V
C40-42	YF400473FZT	Ceramic	0.047 μF
C43,44	ECEA1CKS220	Electrolytic	22 μF 16V
C45-47	ECEA0GKA470	Electrolytic	47 μF 4V
C48	ECEA1AKA220	Electrolytic	22 μF 10V
C49	YWT316B104MT	Ceramic	0.1 μF
C50	ECEA0GKA470	Electrolytic	47 μF 4V
C51	ECEA1HKAR47	Electrolytic	0.47 μF 50V
C52	ECEA0GKA470	Electrolytic	47 μF 4V
C53	ECEA1HKAR47	Electrolytic	0.47 μF 4V
C100,101	YF400220CHJT	Ceramic	22 pF
L1-3	ELESE220KA	Coil	22 μH
CF1	YWYS30389	Filter	
CF2	YWYS30383	Filter	
CF3	YWYS30389	Filter	
CF4	YWYS30383	Filter	
CF5	YWY5G0382	Filter	
CN9	YW530150810B	8-pin Connector	
CN10	YW530150810Y	8-pin Connector	
CN11	FCN795P020L0	20-pin Connector	

REF.NO.	PART NO.	DESCRIPTION	
POWER BOARD			
PCB5 (NLA)	YWJKYAVE5E2A	Printed Circuit Board Assy	
VS1	ERZC07DK471U	Znr	
R1	ERC12ZGK105	Solid Resistor	1M ohms
C1,2	ECQU2A563MT	Plastic	0.056 μF
C3,4	ECA1AFQ331	Electrolytic	330 μF 10V
C5,6	ECA1EFQ331	Electrolytic	330 μF 25V
C7	ECA1AFQ331	Electrolytic	330 μF 10V
C8,9	ECA1EFQ331	Electrolytic	330 μF 25V
C10-12	ECKDRS152ME	Ceramic	1500 pF
C13	ECA1AFQ331	Electrolytic	330 μF 10V
L1,2	YFELC10E007	Coil	
L3,4	ELC08D082	Coil	
L5	ELF18D290H	Coil	
SW1	YWSDDFA325	Push Switch	
F1,2 ⚠	SSFR1.6A002	Current Fuse	1.6A
F3,4 ⚠	YWSSFR1AF002	Current Fuse	1A
CN1	YW530140310	3-pin Connector	
CN2	YW530140710R	7-pin Connector	
CN3	YW530140410	4-pin Connector	
E1	S-N5057	Fuse Holder	
TP1	YWTM028	Test-pin	
REGULATOR BOARD			
PCB6 (NLA)	YWJKYAVE5E3A	Printed Circuit Board Assy	
IC2	AN79N12	IC	
IC3	AN1431T	IC	
Q1	2SD973-QRS	Transistor	
Q3,4	2SD636-QRS	Transistor	
D1	S1WBA60	Diode	
D2	ES1F	Diode	
D3,4	EM01Z	Diode	
D5	YWPC111	Diode	
D6,7	ERB44-02	Diode	
R1	ERF5TJ220	Wire Wound	220 ohms 5W
R2,3	ERDS1TJ224	Carbon	220 Kohms 1/2W
R4	ERG1SJ101	Metal	100 ohms 1W
R5	ERG3SJ563P	Metal	56K ohms 3W
R6	ERDS2TJ472	Carbon	4.7K ohms 1/4W
R7	ERDS2TJ101	Carbon	100 ohms 1/4W
R8	ERX1SJ2R2	Metal	2.2 ohms
R9	ERC12ZGM156	Solid Resistor	15M ohms 1/2W
R10	ERDS2TJ102	Carbon	1K ohms 1/4W
R11	ERDS2TJ333	Carbon	33K ohms 1/4W

REF.NO.	PART NO.	DESCRIPTION	
R12	ERDS2TJ334	Carbon	330K ohms 1/4W
R13	ERDS2TJ103	Carbon	10K ohms 1/4W
R14	ERDS2TJ561	Carbon	560 ohms 1/4W
R15	ERDS2TJ151	Carbon	150 ohms 1/4W
R16,17	ER0S2CKF6801	Metal	6.8 ohms
VR1	YFH0621A2R2K	Variable Resistor	2.2K ohms
C1	ECQU2A153MN	Plastic	0.015 μF 250V
C2	CK45E2EA332	Ceramic	3300 pF 250V
C3	EC0S2GA680CA	Electrolytic	68 μF 400V
C4	ECQV1H104JZ	Plastic	0.1 μF 50V (TF)
C5	ECKD3A221KBN	Ceramic	220 pF
C6	ECQE6103JZ	Plastic	0.01 μF 630V
C7,8	ECEA1HFS010	Electrolytic	1 μF
C9	ECEA1HU4R7	Electrolytic	4.7 μF 50V
C10	ECA1EFQ331	Electrolytic	330 μF 25V
C11	ECEA1CFE181	Electrolytic	180 μF
C12	ECEA1EFE221	Electrolytic	220 μF
C13	ECEA1CFE181	Electrolytic	180 μF
C14,15	ECA0JFQ152	Electrolytic	1500 μF
C16	ECA0JFQ102	Electrolytic	1000 μF
C17	ECQB1H332JZ	Plastic	0.0033 μF
C18	RPE132F104Z	Ceramic	0.1 μF
C19	CK45E2EA332	Ceramic	0.0033 μF
C20	ECQV1H683JZ	Plastic	0.068 μF
L1	YWTSL07150K	Coil	15 μF
T1	ETS27K722A	Power Transformer	
CN1	YW5289-4A	4-pin Connector	
CN2	EMCS0552M	5-pin Connector	
E1	YWMA01	Terminal	
M31	YWV2CA0318A4	Hold Plate	
M32	YWV2HA0892A3	Shield Parts	
M33	YWV2PA0403A4	Insulator	
M34	YWV2PA0415A3	Insulator	
M35	YWV7DA0267A3	Heat Sink	
M36	YWV1BA0020A4	Support	

SWITCH BOARD

REF.NO.	PART NO.	DESCRIPTION	
PCB7 (NLA)	YWJKZAVE5E1A	Printed Circuit Board Assy	
IC1-3	YWNJM2068DD	IC	
IC5	AN90B20	IC	
Q1-4	2SD1991A	Transistor	
Q5,6	2SB1320A	Transistor	
Q7-12	2SD1992A	Transistor	
D1-43	YWLT3S44P	LED	
D44-50	MA165	Diode	
D51	LN210RP	LED	
R1	ER0S2CKF3301	Metal	
R2	ER0S2CKF4702	Metal	
R3	ER0S2CKF1002	Metal	
R4	ER0S2CKF2203	Metal	
R5	ERDS2TJ203	Carbon	20K ohms 1/4W
R6	ERDS2TJ302	Carbon	3K ohms 1/4W
R7	ERDS2TJ203	Carbon	20K ohms 1/4W
R8	ERDS2TJ302	Carbon	3K ohms 1/4W
R9	ERDS2TJ203	Carbon	20K ohms 1/4W
R10	ERDS2TJ302	Carbon	3K ohms 1/4W
R11	ERDS2TJ203	Carbon	20K ohms 1/4W
R12	ERDS2TJ302	Carbon	3K ohms 1/4W
R13	ERDS2TJ100	Carbon	10 ohms 1/4W
R14	ERDS2TJ101	Carbon	100 ohms 1/4W
R15,16	ER0S2CKF3302	Metal	33Kohms
R17-20	ER0S2CKF2202	Metal	22K ohms
R21,22	ER0S2CKF3302	Metal	33Kohms
R23,24	ER0S2CKF7502	Metal	75Kohms
R25	ER0S2CKF1001	Metal	1K ohms
R26,30	ERDS2TJ272	Carbon	2.7K ohms 1/4W
R31-38	ERDS2TJ102	Carbon	1K ohms 1/4W
R39-46	ERDS2TJ101	Carbon	100 ohms 1/4W
R47,48	ER0S2CKF2702	Metal	27K ohms
R49	ER0S2CKF1001	Metal	1K ohms
R50,51	ER0S2CKF4301	Metal	4.3K ohms
R52	ERDS2TJ104	Carbon	100K ohms 1/4W
R53,54	ERDS2TJ302	Carbon	3K ohms 1/4W
R55,56	ERDS2TJ104	Carbon	100K ohms 1/4W
R57	ERDS2TJ182	Carbon	1.8K ohms 1/4W
R58-61	ERDS2TJ101	Carbon	100 ohms 1/4W
R62	ERDS2TJ105	Carbon	1M ohms 1/4W
R63-70	ERDS2TJ103	Carbon	10K ohms 1/4W
R71-75	ERDS2TJ102	Carbon	1K ohms 1/4W
R101-106	ERDS2TJ512	Carbon	5.1K ohms 1/4W
R107-112	ERDS2TJ104	Carbon	100K ohms 1/4W
VR1	EWAQA0X05B54	Variable Resistor	50K ohms
VR2,3	EWAPA1X05C54	Variable Resistor	50K ohms
VR4	EWAQA1X05C54	Variable Resistor	50K ohms
VR8,9	EWAQFEX05B15	Variable Resistor	100K ohms
VR10	EWAPFEX05B15	Variable Resistor	100K ohms
VR11	EWAPFEX05C54	Variable Resistor	50K ohms
VR12,13	EVNDXAA03B33	Variable Resistor	3K ohms
C1	ECEA1HKN010	Electrolytic	1 µF 50V
C2	ECCF1H820J	Ceramic	82 pF 50V
C3	ECKF1H101KB	Ceramic	100 pF 50V
C4	ECQV1H104JZ	Plastic	0.1 µF 50V (TF)
C5	ECEA1HKN010	Electrolytic	1 µF 50V
C6	ECCF1H270JC	Ceramic	27 pF
C7	ECKF1H101KB	Ceramic	100 pF 50V
C8	ECQV1H104JZ	Plastic	0.1 µF 50V (TF)
C9	ECEA1HKN010	Electrolytic	1 µF 50V
C10-13	ECEA1AKA220	Electrolytic	22 µF 10V
C14-16	ECEA1CKS101	Electrolytic	100 µF 16V
C17	ECQV1H104JZ	Plastic	0.1 µF 50V (TF)
C18,19	ECKF1H101KB	Ceramic	100 PF 50V
C20	ECQV1H104JZ	Plastic	0.1 µF 50V (TF)
C21,22	ECKF1H101KB	Ceramic	100 pF 50V
C23	ECQV1H104JZ	Plastic	0.1 µF 50V (TF)
C24	ECCF1H180JC	Ceramic	18 pF
C25	ECKF1H101KB	Ceramic	100 pF 50V
C26	ECQV1H104JZ	Plastic	0.1 µF 50V (TF)
C27	ECCF1H180JC	Ceramic	18 pF
C28	ECKF1H101KB	Ceramic	100 pF 50V
C29	ECQV1H104JZ	Plastic	0.1 µF 50V (TF)
C30,31	ECEA1HKN010	Electrolytic	1 µF 50V
C32	ECEA1VKA330I	Electrolytic	33 µF 35V
C33,34	ECEA1HKS010	Electrolytic	1 µF 50V (KS)
C35	ECEA1AKS470	Electrolytic	47 µF 10V
C36	ECEA1CKS101	Electrolytic	100 µF 16V
C37-40	ECCF1H220JC	Ceramic	22 pF 50V
C41-44	ECEA0JKS331	Electrolytic	330 µF 6.3V
L1	ELESE220KA	Coil	22 µH
L2	ELESE101KA	Coil	100 µH
SW1-44	EVQQTU05R	Push Switch	
CN1	YW530150210	2-pin Connector	

ACCESSORY PARTS/PACKAGING PARTS

REF.NO.	PART NO.	DESCRIPTION
M51	YWV8QA2154AN	Operating Instructions
M52	YWV8EA0136A3	Dustor Cover
M53	XZB26X40C05	Polyethylene Bag for Printed
M54	XZB55X71C1	Polyethylene Bag for AV Mixer
M55	YWV9CA1475AN	Packaging Assy for WJ-AVE5/A
	YWV9CB1475BN	Packaging Assy for WJ-AVE5/B
	YWV9CD1475AN	Packaging Assy for WJ-AVE5/C
	YWV9CC1475BN	Packaging Assy for WJ-AVE5/G
M56	YWV7SA1187A3	Packaging Label for WJ-AVE5/B
	YWV7SA1210A3	Packaging Label for WJ-AVE5/C
	YWV7SA1188A3	Packaging Label for WJ-AVE5/G
M57	YWS-SNPRB06	Packaging Label

Printed in Japan
C–238 Ⓝ8, 5